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Supreme Court of the United States

OCTOBER TERM, 1977

No. 77-1421

LAHMAN MANUFACTURING COMPANY, INC., and ROBERT ANDERSON, d/b/a PLATTE IMPLEMENT,

Petitioners,

vs.

FARMHAND, INC.

Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE EIGHTH CIRCUIT

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IN THE

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No. ———

LAHMAN MANUFACTURING COMPANY, INC., and ROBERT ANDERSON, d/b/a PLATTE IMPLEMENT

Petitioners,

vs.

FARMHAND, INC.

Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE EIGHTH CIRCUIT

Petitioners pray that a writ of certiorari issue to review the judgment of the United States Court of Appeals for the Eighth Circuit entered in this case on January 11, 1978.

CITATION TO OPINIONS BELOW

The District Court's opinion in this case is reported at 192 USPQ* 749 (1976) and appears as Appendix A of the separate volume being submitted within this Petition, the opinion of the Court of Appeals is reported at 196 USPQ 597 (8 Cir. 1978), and appears at Appendix B, herein.

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*Not otherwise reported.

JURISDICTION

The jurisdiction of this Court is invoked under 28 U.S.C. 1254 (1), as to the judgment by the Court of Appeals entered January 11, 1978.

QUESTIONS PRESENTED

The questions presented by this Petition are the following:

1. Whether an invention based upon a combination of admittedly old elements is patentable where the test of synergism is not met.

2. Whether the test of obviousness, to the exclusion of synergism, is the "*only*" correct test to be applied in determining whether a new combination of admittedly old elements amounts to invention.

STATUTES INVOLVED

§102 Conditions For Patentability—Novelty And Loss of Right to Patent—

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or * * *. 35 U.S.C. 102

§103 Conditions For Patentability; Nonobviousness Subject Matter

A patent may not be obtained though an invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived in the manner in which the invention was made." 35 U.S.C. 103.

STATEMENT OF THE CASE

Prior Proceedings

This is a patent infringement suit based upon Claims 10 and 11 of Boyd Schiltz Patent No. 3,298,550 which relates to haystack movers. Defendants Counterclaimed for a Declaratory Judgment that the patent is invalid. Jurisdiction in the District Court was based upon 28 U.S.C. §§1338(a) and 1400(b).

After the bench trial, the District Court held the patent valid and found Claims 10 and 11 infringed. Defendants appealed from the District Court's decision.

Prior to trial, the District Court granted Defendants' motion to sever a Counterclaim for violation of the antitrust laws and the resolution of the issue of damages was severed, awaiting a decision on the issue of validity and infringement.

The Court of Appeals ruled that the findings of the District Court were adequately supported by the evidence, that the District Court did not err in applying the law to the facts, and affirmed the opinion below, without mentioning the issue of anticipation of the Schiltz patent or the rule of law to be applied for a combination of old elements. Synergism, as it applied to a combination of admittedly old elements was not mentioned in the decisions, either at the Appellate Court level or District Court level, despite arguments thereon by Defendants.

Schiltz Patent

The Schiltz patent in suit (Appendix C)* relates to a truck mounted, or trailer drawn, mechanism for moving haystacks or similar items. The haystack mover employs six roller chains running lengthwise over beams on an elongated truck or trailer bed. As the truck is backed into a haystack, the load carrying surface is slightly inclined and the roller chains serve as a conveyor pulling the haystack onto the load surface. In loading a haystack with the device, the mover is backed up to a haystack, the bed is titled, and the mover is started back under the stack. At this point, the rearward motion of the truck or tractor and the forward motion of the chains on the bed act in concert to lift the stack onto the bed as the bed simultaneously moves further under the stack. Unloading the mover requires a mere reversal of this process. (Appendix B, p. 599)

I. SYNERGISM — A REQUIREMENT

The District Court, although citing *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, (1976) erred in its determination by failing to apply the synergistic test set forth by this Court in *Sakraida* and consequently ruled that the Schiltz invention was not obvious. (Appendix A, p. 761) The synergism test recently reiterated in *Sakraida*, in dealing with a combination of admittedly old elements, requires the production of something more than the sum of the pre-existing elements, there must be a synergistic result that is itself nonobvious. As set forth by Justice White in *Roanwell Corp. v. Plantronics, Inc.*, — U.S. —, 97 S. Ct. 538, the District Court failed to make any finding that the combination produced a synergistic result that is itself nonobvious. Like the District Court in *Roanwell*, Judge Nichol failed to make any findings that the combination of elements of Claim 10 of the patent in suit produced any synergistic, unusual, or for that matter even any "striking" result, although petitioners argued that such a determination of synergism must be made as mandated by this Court.

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*Separate volume.

Roanwell sets the stage in showing the need for review of this case, for several reasons:

1. Here, unlike *Roanwell*, all the prior art elements of Claim 10 are disclosed in a single reference performing the same functions, i.e. the Bruce patent.

   In *Roanwell* the record clearly demonstrated "* * * that all of the individual elements of the patented headsets were used in the prior art, although no single item * * * used the complete combination."

2. Here, the full combination of Claim 10 is disclosed in a single reference, i.e. the Bruce patent.

   In *Roanwell*, "* * * no one had used the full combination of all elements, [but] each element had been combined with one or more of the others in a variety of different headsets."

3. Here, the District Court and the Eighth Circuit Court of Appeals failed to apply the synergism test.

   Since the *Roanwell* decision in December of 1976, Courts of Appeals, other than the Eighth Circuit have applied the test of synergism to combinations of old elements to determine patentability.

As Justice White observed in *Roanwell,* and applying that observation in this case, the lack of a finding of synergism was not surprising, because—

> "Each element in the combination had previously been used to perform the same function it now performs in respondent's device."

This Court in *Sakraida* very clearly stated that a combination of elements must produce something more than the sum of the pre-existing elements; there must be a synergistic result that is itself nonobvious.

BRUCE PATENT NO. 1,628,871

The Bruce machine disclosed in Patent No. 1,628,871 (Appendix E)* is surprisingly like the Schiltz machine disclosed in the Schiltz Patent No. 3,298,550. (Appendix C) The following description of the Boyd Schiltz machine is that of the Trial Court (Appendix A, p. 753) in which the elements of the Bruce machine have been added with italics and by placing the Boyd Schiltz machine element numerals in brackets.

> The [Schiltz] *Bruce* invention provides for chains [27] *30* (*as shown in Figure 2*) having upper and lower flights [28 and 29 respectively]. Each chain [27] *30* is mounted upon a different one of the longitudinally extending beams [19] *12*. The chains [27] *30* provide the primary supporting surface of the [hay] stack during the loading and unloading operations. By driving the chains [27] *30* forwardly at a rate generally equal to the rate the mover is going rearwardly, the upper flights of the chains remain relatively fixed with respect to the [hay] stack. The chains [27] *30* function to lift the [hay] stack from the ground, providing a path for the support beams [19] *12* to move under the [hay] stack between the chains [27] *30* and the ground; and the support beams [19] *12* function to guide and support the chains as they are laid out underneath the [hay] stack. The result is that the chains, beams and speed relationship of the forward motion of the chains and rearward motion of the machine, combine to lift the [hay] stack vertically onto the mover bed without appreciable horizontal movement and without disarrangement of the [hay] stack.

Now compare the above description with that of the language from the Bruce patent.

> As the platform is lowered to load a stack, the fingers 12 and arms 13 are engaged with the ground to pick up material from the ground level. As the forward movement of the platform continues, gear 16 meshing with gear 51 drives the chains so that their upper runs travel toward the headrails 10 and anything resting upon the upper surface of the fingers will be moved toward the rear end of the fingers. When the device is fully engaged with the stack, the transmission is placed in neutral so that no movement of chains 30 takes place to discharge the load from the platform. The load is then transported to its place of unloading, and if it is desired to discharge the load bodily, the transmission is placed in proper gear and the upper run of the chains will move toward the rear ends of the teeth to bodily unload the load which is carried. (Appendix E, p. 2, lines 115-130; p. 3, lines 1-27)

The Bruce structure responds to each element of Claim 10 of the Schiltz Patent. It should be noted that elements (b), (d), and (h) are broad recitations to "means," permitting equivalents of the structure disclosed, to be used as anticipating elements.

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*Separate volume.

SEE APPENDIX F*, FOR A COMPARISON OF EACH ELEMENT OF BRUCE TO CLAIM 10.

Any further question relating to the "means * * * for tilting movements * * *," element (d), was answered by Defendant's expert Mr. Wolfe on cross-examination where he stated, by reference to the Bruce mechanism, "It doesn't describe it, but it shows it. I mean, the elements are there." (Appendix G*, T-756, 757, 759)

If there are any questions about being able to adjust the speed of the chains, they were satisfied by Plaintiff's expert, Mr. Strait who admitted that the change in speed of the chains on the Bruce machine could be done by any farmer. (Appendix D*, A. 758-759)

The District Court erred by ignoring Mr. Strait's testimony on cross-examination, in considering the issue of validity or invalidity, when Mr. Strait described how the speed relationship could be obtained with reference to the infringement issue.

> "Q. Let me ask you this, in timing and working on these machines, does each tractor as they are made by different companies, have a different speed in reverse?
> A. Yes, they do.
> Q. There is no standard in the industry, is there?
> A. No, there is no industrial standard that they have all of the same speed in reverse, that is correct.
> Q. And does Farmhand make an attempt, that you know of, to try and gear their machine so that it is generally equal to the forward movement [T. 63] of the chains with respect to different makes of tractors?
> A. You don't need to. The operator can accomplish this." (Appendix D, A-292)

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*Separate volume.

If the farm operator of the Schiltz machine can adjust the speed to insure that the chains operate at the same speed as the forward or rearward movement of the trailer vehicle, that same farm operator is obviously capable of adjusting the transmission in the Bruce machine to provide the same function.

Evaluation of each of the elements of the Boyd Schiltz combination demonstrates that they have the same effect which the prior art teaches in the Bruce patent, and thus cannot be synergistic nor produce an advance in the art in a synergistic manner to achieve a new result, however desirable, efficient, or striking the result may be.

The decisions of this Court in *Anderson's Black Rock, Inc. v. Pavement Salvage Co., Inc.*, 396 U.S. 57 (1969), *Sakraida* (supra) and *Dann v. Johnston*, 425 U.S. 219, (1976) set the controlling precedent in guiding the resolution of the question of validity which must include the synergistic test.

Each of the Courts of Appeals finding a combination of old elements valid since *Sakraida*, have followed the synergistic test, with the exception of the Eighth Circuit, which appears to limit the test to that enumerated in *Graham v. John Deere*, 383 U.S. 1 (1966) rather than to include the test of synergism. [Apparently the Fourth Circuit has not had the question before it.] That test, since *Sakraida*, has been followed in *International Telephone And Telegraph Corporation v. Raychem Corporation*, (1 Cir. 1976) 538 F. 2d 453, 191 USPQ 1, cert. den. 191 USPQ 409; *Rosen et al. v. Lawson-Hemphill, Inc.*, (1 Cir. 1976) 549 F. 2d 205; *Digitronics Corp. v. The New York*

Racing Association, Inc. et al., (2 Cir. 1977) 553 F. 2d 740; *U.S. Philips Corp. v. National Micronetics, Inc. et al.*, (2 Cir. 1977) 550 F. 2d 716; *Systematic Tool And Machine Company et al. v. Walter Kidde & Company, Inc.*, (3 Cir. 1977) 555 F. 2d 342; *Aluminum Company of America, et al. v. Amerola Products Corporation et al.*, (3 Cir. 1977) 152 F. 2d 1020; *Fred Whitaker Company v. E. T. Barwick Industries, Inc.*, (5 Cir. 1977) 551 F. 2d 622; *The Robbins Company v. Dresser Industries, Inc.*, (5 Cir. 1977) 554 F. 2d 1289; *Reynolds Metal Company v. Acorn Building Components, Inc.*, (6 Cir. 1977) 548 F. 2d 155; *Kearney & Trecker Corporation v. Cincinnati Milacron, Inc. et al.*, (6 Cir. 1977) 195 USPQ 402; *Pederson v. Stewart-Warner Corporation*, (7 Cir. 1976) 536 F. 2d 1179; *Burland v. Trippe Manufacturing Company*, (7 Cir. 1976) 543 F. 2d 588; *St. Regis Paper Company v. Bemis Company, Inc.*, (7 Cir. 1977) 549 F. 2d 833; *Kamei-Autokomfort, et al. v. Eurasian Automotive Products*, (9 Cir. 1977) 553 F. 2d 603; and *Rutter v. Williams*, (10 Cir. 1976) 541 F. 2d 878.

If there was any doubt about what the Eighth Circuit Court of Appeals thought of the test of synergism, it was clearly and unambiguously enunciated in its decision which came some 38 days after its decision in this case. In the case of *Clark Equipment Co., et al. v. Louis J. Keller, et al.*, (8 Cir. 1978) — F. 2d — (not yet reported but appearing in Appendix H herein), the Court first chastised Clark for failure to request the District Court for a synergism analysis, at or before, the trial in early 1975. (slip op. at 4) *Sakraida* was not decided by this Court until April 20, 1976. The Appellate Court did say:

> "Because we find that the District Court did in fact give adequate consideration to the effect of the combination of elements in the 503 patent, we need not address the question of whether or not a synergism analysis was *mandatory* on the facts here." [Emphasis added] (slip op. at 19)

The Appellate Court then rationalized the decision of the District Court on the basis that the old elements in *Sakraida, Anderson's-Black Rock*, and *Great Atlantic and Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147 reh. den., 340 U.S. 918 (1950), contained old elements which were not as complex as the old elements of the patent there in suit.

Ultimately, the Eighth Circuit Court of Appeals found no wisdom in the use of a synergism analysis and stated:

> "In the patent law context, 'synergism' has no talismanic power; synergism is merely one indication of nonobviousness. What is required, when a synergism analysis is appropriate, is simply a determination that the combination of elements in a patent produces 'an effect greater than the sum of the several effects taken separately.' ", citing *Anderson's-Black Rock*. (slip op. at 20)

Patent litigants in at least eight out of ten circuits have been granted the benefit of the prior decisions of this Court on the issue of synergism. It is unfair that patent litigants in the Eighth Circuit should be denied the benefit of this Court's prior rulings in this respect.

II. OBVIOUSNESS — WITHOUT SYNERGISM

The Trial Court Concluded:

> "As noted by the Eighth Circuit Court of Appeals, the test of obviousness is the *only* correct test to be applied in determining whether a new combination of known elements amounts to invention." (Appendix A, p. 759)

The Appellate Court indicated its satisfaction with the findings of the District Court, and the District Court's application of the law to the facts. (Appendix B, p. 6) The District Court was in error in applying the law under 35 U.S.C. §103 rather than §102, where the Bruce patent clearly anticipates the claimed elements of Schiltz.

This Court in *Great Atlantic And Pacific Tea Co. v. Supermarket Equipment Corp.*, (supra) stated:

> "The Court should scrutinize combination patent claims with care proportioned to the difficulty and improbability of finding invention in an assembly of old elements, that the function of a patent was to add to the sum of useful knowledge and that patents could not be sustained when on the contrary their effect was to subtract from former resources freely available to skilled artisans."

The District Court concluded that none of the prior art patents alone taught the Schiltz invention as claimed, and therefore, it was impossible to find the Schiltz invention obvious. The District Court by implication inferred that the various elements making up the Schiltz device can be found only in "isolation" in the prior art. (Appendix A, p. 758) Thus, the District Court erred in applying a "strict identity" test in finding that the Bruce reference lacked elements (d) and (h) of Claim 10. (Appendix A, p. 758)

The Court erred even further in finding that "None of the cited prior art disclosed devices designed for moving *large* haystacks, or similar objects, through the use of chain conveyors." [Emphasis added] (Appendix A, p. 761)

While there is not one word in the Boyd Schiltz patent about the size of haystacks, it hardly requires an inventor to perceive that a strawstack mover such as disclosed in Bruce can be used to move haystacks, and if it is a large haystack, the machine might have to be enlarged. Judge Nichol's finding is much like that of the District Court in *Roanwell* (supra) with respect to which Justice White pointed out in referring to the District Court, "* * * he found that the requirement of nonobviousness was satisfied simply because no one had created the successful combination before respondent secured his patent. In so doing, the Court departed from the clear teachings of this Court's prior cases."

Each of the elements forming the invention claimed in the patent in suit was admittedly old and the Court so found. (Appendix A, p. 758) In Plaintiff's opening statement, counsel's remarks for Plaintiff are right to the point:

> "As far as the chains and beams and drive members and so on, these aren't new elements. As I'm reminded of someone that was talking about a combination of elements and patents, and pointing out in the prior art where this element was and that element was, and his response was: I don't need to go to the prior art to find those; I can go to a hardware store; you can go to a junkyard and find chains and beams and frames, and so on, so there is no missing ingredient." (Appendix D, A-13)

As presented above, the Bruce patent anticipates Claim 10 under 35 U.S.C. §102, rather than rendering the patent in suit obvious under 35 U.S.C. §103, but if somehow the Bruce prior art reference fails to satisfy the §102 test, any such difference would be in minor matters only and would suggest itself to one of ordinary skill in the art because the general aspects of the Bruce patent and the patent in suit are the same.

It is axiomatic that an invention is not patentable if it lacks novelty. 35 U.S.C. §102.

Statutory novelty requires that an invention be, in fact, something "new." *Graham v. John Deere Co.,* (supra). Essentially, there must be a determination made as to whether there is "disclosure in the prior art of a thing substantially identical to the claimed invention." This Court appears never to have required an absolute "strict identity" test for §102. That is, it is sufficient if the two devices are substantially identical or equivalent, or if they perform the same function in substantially the same way and accomplish substantially the same results: the fact they may differ in name and form is immaterial. *Brush v. Condit,* N.Y. 1889, 132 U.S. 39. See, also, *Winans v. New York, etc., R. Co.,* N.Y. 1859, 21 How. 88; *Wollensak v. Sargent,* Conn. 1894, 151 U.S. 221; *Lawther v. Hamilton,* Wis., 1888, 124 U.S. 1; *Siemens v. Sellers,* Pa. 1887, 123 U.S. 276; *Union Paper-Bag Mach. Co. v. Murphy,* Mo. 1878, 97 U.S. 102.

The Eighth Circuit Court of Appeals had no difficulty in applying that test in *American Infra-Red Radiant Co. v. Lambert Industries, Inc.,* 360 F. 2d 977, 989 (1966), but approved the Trial Court's omission of it in this case.

In the face of the Bruce patent disclosure, the District Court found that the Bruce patent could not be made to perform substantially the same functions as the Schiltz invention in substantially the same way, either as the patent reads or with the addition of changes requiring only ordinary mechanical skill. The Court concluded that the Schiltz invention was novel under 35 U.S.C. §102. (Appendix A, p. 757) That conclusion was error.

CONCLUSION

Petitioner submits that the District Court erred in not applying the test for synergism required by this Court for a combination of admittedly old elements. The Eighth Circuit Court of Appeals, setting itself apart from the other Circuit Courts of Appeals, compounded that error by also disregarding the test of *Sakraida.*

For the foregoing reasons, the Petition For A Writ Of Certiorari should be granted.

Respectfully submitted,

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Appendices

APPENDIX—A

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[749]

District Court, D. South Dakota, Southern Div.

Farmhand, Inc.
v. Lahman Manufacturing Company, Inc.,
et al.

No. Civ. 73-4037

Decided Sept. 27, 1976

PATENTS

1. Patentability—In general (§51.01)

Requirements for patentability of invention are set out in 35 U.S.C. 101-103; to be patentable, invention must be useful, novel, and nonobvious with respect to prior art; all three of these requirements must be met by valid patent.

2. Pleading and practice in courts—Burden of proof—Validity (§53.138)

Presumption from patent grant—In general (§55.1)

[750]

Presumption from patent grant—Weight of (§55.9)

All patents carry rebuttable presumption of validity when issued, and burden of establishing invalidity rests on party asserting it; invalidity of patent must be shown by substantial evidence, not merely preponderance; party asserting patent invalidity must not only overcome statutory presumption of validity, but must also rebut whatever proof patentee offers in defense of validity of his claim.

3. **Patentability—Anticipation—In general (§51.201)**

Patentability—Anticipation—Prior knowledge, use or sale (§51.223)

Unlike defense under Section 102(a) where prior knowledge and use must be "public" at time patented invention is made, prior invention under Section 102(g) requires only that invention be complete, i.e., conceived and reduced to practice, and not abandoned, suppressed or concealed.

4. **Interference — Reduction to practice — In general (§41.751)**

Patentability—Anticipation—Experiments (§51.209)

Another's experiment, imperfect and never perfected, will not serve either as anticipation or as part of prior art, for it has not served to enrich it; patented invention does not become "known" by such use or sale, or by anything of which art cannot take hold and make use as it stands; reduction to practice contemplates actual and complete use of particular invention for its intended purpose.

5. **Abandonment—In general (§10.1)**

Interference—Priority (§41.70)

Patentability—Anticipation—In general (§51.201)

Patentability—Anticipation—Prior knowledge, use or sale (§51.223)

Section 102(g) requires that invention not be "abandoned, suppressed, or concealed"; invention, although completed is deemed abandoned, suppressed, or concealed if, within reasonable time after completion, no steps are taken to make invention publicly known.

6. **Patentability—Anticipation—Experiments (§51.209)**

Patentability—Anticipation—Prior knowledge, use or sale (§51.223)

Section 102(a) requires that any prior use must have been "public"; experimental use is not public use within meaning of this section.

7. **Patentability—Anticipation—Experiments (§51.209)**

Patentability—Anticipation—Prior knowledge, use or sale (§51.223)

Mere fact that attempt to get device to work was not concealed does not make use public within meaning of Section 102(a).

8. **Patentability—Anticipation—In general (§51.201)**

Patentability—Invention—In general (§51.201)

All elements of invention or their equivalent must be found in single description or structure where they do substantially same work in substantially same way, in order to negative novelty or anticipate invention; while prior art can be combined to demonstrate obviousness under Section 103, in order to anticipate under Section 102 single prior reference must disclose invention in question.

9. **Patentability—Aggregation or combination—Of old elements (§51.159)**

Patentability—Invention—In general (§51.501)

Fact that component elements are old in art is not alone dispositive of obviousness issue.

10. Patentability—Tests of—Skill of art (§51.707)

Level of ordinary skill in art is another initial determination that must be made under Graham v. John Deere Co., 148 USPQ 459.

11. Patentability—Tests of—Skill of art (§51.707)

Ordinary skill in art relative to transporting haystacks was low.

12. Patentability—Aggregation or combination—Of old elements (§51.159)

Patentability—Anticipation—Combining references (§51.205)

Patentability—Invention—In general (§51.501)

[751]

Patentability—Tests of—In general (§51.701)

Patent cannot be held valid for development that would have been obvious to one of ordinary skill in art in light of prior art; prior art may be combined for purposes of demonstrating obviousness; obviousness test is only correct test to be applied in determining whether new combination of known elements amounts to invention.

13. Patentability—Aggregation or combination—Of old elements (§51.159)

Patentability—Anticipation—Combining references (§51.705)

Patentability—Invention—In general (§51.501)

Court must avoid slipping into use of hindsight when determining obviousness; fact that all elements of claimed

invention may be disclosed in prior art does not, of itself, negative patentability, as in retrospect many creative developments seem commonplace; critical question under Graham v. John Deere Co., 148 USPQ 459, is whether at time of invention subject would have been obvious to one skilled in art; when prior art references are combined to challenge patentability, test to be applied is, does prior art suggest to one ordinarily skilled in art doing what applicant has done.

14. Presumption from patent grant—Weight of (§55.9)

Patent is presumed valid when issued but presumption is rebuttable, and must be overcome by substantial evidence negating one of three requisites of patentability.

15. Presumption from patent grant—Patent Office consideration of prior art (§55.5)

Presentation to court of prior art not disclosed to Patent Office weakens or destroys presumption of validity; however, mere fact that patent was not cited should not be sufficient to destroy presumption of validity.

16. Presumption from patent grant—Patent Office consideration of prior art (§55.5)

Where Patent Office cites some prior art, but not other equally relevant and similar prior art, presumption of validity is weakened only to extent that teaching of uncited art is not disclosed in cited art.

17. Patentability—Evidence of—In general (§51.451)

Factors such as commercial success of invention, solution to long felt needs, and failure of others to arrive at solution may be considered as evidence of obviousness or unobviousness of invention under Graham v. John Deere Co., 148 USPQ 459.

18. Patentability—Evidence of—Commercial success—Causes (§51.4555)

Factors such as stability of sales of prior art type device may go to minimize argument of commercial success.

19. Patentability—Evidence of—Delay and failure of others to produce invention (§51.459)

Another indicator of nonobviousness of invention was solution of long-felt need for safer and more convenient device; age and volume of prior art cited demonstrates desire to improve art.

20. Patentability—Evidence of—Delay and failure of others to produce invention (§51.459)

Additional indicator of nonobviousness is fact that all elements needed to produce device were readily available; fact that nothing unknown was needed to create invention, and that invention was still not forthcoming, is evidence of fact that invention was nonobvious, and required exercise of inventive act.

21. Patentability—Evidence of—Delay and failure of others to produce invention (§51.459)

Failure of others, attempting to improve upon prior art, to arrive at solution comparable to invention is further evidence of nonobviousness, and may serve to strengthen presumption of patent validity.

22. Patentability—Evidence of—Acquiescence in validity (§51.453)

Fact that others in industry acquiesce in patent validity at expense to themselves may be considered evidence of nonobviousness and patent validity.

23. Patentability—Evidence of—Acquiescence in validity (§51.453)

While fact that accused infringer chose to admit validity of patent and proceed only on infringement issue may not be strong evidence of patent validity, court must consider it of at least some weight in support of validity.

[752]

24. Defense—Fraud (§30.05)

Failure to use full candor with Patent Office in prosecution of patent application may be raised as defense to enforceability of patent.

25. Defenses—Fraud (§30.05)

Failure of applicant who did not draw examiners' attention away from prior art patent and who mentioned prior art devices, to disclose to Patent Office prior art patent that was within classes examiners searched, and machine that was thought to have no bearing on his patent and that was abandoned experiment not part of prior art and was similar to devices with which examiners were familiar, does not give rise to unenforceability defense.

Particular patents—Haystack Transporting

3,298,550, Schiltz, Haystack Transporting Device, claims 10 and 11 infringed.

Actions by Farmhand, Inc., against Lahman Manufacturing Company, Inc. and Robert Anderson, doing business as Platte Implement, for patent infringement, in which defendants counterclaim for declaratory judgment of patent invalidity and for violations of antitrust laws, and by Lahman Manufacturing Company, Inc., and against Boyd D. Schiltz (third-party defendant) for violation of antitrust laws.

Judgment for Farmhand, Inc.

Deming Smith, and Davenport, Evans, Hurwitz & Smith, both of Sioux Falls, South Dakota, John D. Gould, and Merchant & Gould, both of Minneapolis, Minn., for Farmhand, Inc. and Boyd D. Schiltz.

Joe L. Maynes, and Maynes, Tonner & Maynes, both of Aberdeen, South Dakota, and Kenneth D. Siegfried, and Schroeder, Siegfried, Ryan & Vidas, both of Minneapolis, Minn., for Lahman Manufacturing Company, Inc., and Robert Anderson.

Nichol, Chief Judge.

This is an action for infringement of claims 10 and 11 of United States Patent No. 3,298,550. This patent issued on January 17, 1967, to Boyd D. Schiltz (Schiltz) for a "Haystack Transporting Device." Plaintiff, Farmhand, Inc. (Farmhand), is the owner of the patent by assignment from Schiltz. Jurisdiction in this court is based upon 28 USC sections 1338(a) and 1400(b). Venue is proper in this division under 28 USC section 1393(b).

Farmhand is a Delaware corporation having its principal place of business at 1011 South First Street, Hopkins, Minnesota. Defendant Lahman Manufacturing Company, Inc. (Lahman), is a South Dakota corporation, having its principal place of business at Hecla, South Dakota. Lahman manufactures and sells the alleged infringing haystack movers. Defendant Robert Anderson is an individual doing business as Platte Implement in Platte, South Dakota. It is admitted that Anderson has sold the alleged infringing haystack movers, which he purchased from Lahman.

Plaintiff has sued for an injunction restraining further infringement by Defendants, and for damages. Defendants have counterclaimed for a declaratory judgment that United States Patent No. 3,298,550 is invalid. Defendants further counterclaimed for violations of the antitrust laws, 15 USC sections 1-15. Defendants have also filed a third party complaint against Boyd D. Schiltz, patentee of the patent in suit, under the antitrust laws, 15 USC sections 1-15. Upon Defendants' motion, Defendants' counterclaim for antitrust violations, and the third party complaint against Boyd D. Schiltz were severed. The remaining issues were further bifurcated, with the resolution of the issue of damages to await the outcome of the issues of validity and infringement.

The Patent in Suit

The subject of this lawsuit is a "Haystack Transporting Device" for which a patent was obtained by Schiltz. The device described by the patent is commonly referred to as a chain-type haystack mover. The specifications of the patent disclose a device consisting of a mobile frame and tiltable bed for the loading, transporting, and unloading of large haystacks. The claims in issue teach:

10. A mobile machine for transporting haystacks and comprising:

(a) an elongated frame,

(b) drive means for imparting generally longitudinally directed movement to said machine relative to the ground,

(c) an elongated bed assembly extending longitudinally of said frame,

(d) means mounting said bed assembly on said frame for tilting movements between an inclined position wherein the bed assembly is adapted for movement with said machine and under a haystack for loading and unloading of a [753] haystack onto said bed assembly, and a horizontal load transporting position,

(e) said bed assembly including a plurality of laterally spaced longitudinally extending support members,

(f) a plurality of laterally spaced endless conveyor elements one each mounted on a different one of at least some of said support members, and each having upper and lower flights, the upper flights overlying their respective support members and being adapted to carry hay onto and off of said bed assembly as it is moved under a stack,

(g) a plurality of longitudinally spaced hay-engaging teeth on each of said conveyor elements.

(h) and second drive means operative to impart concerted movement to the inclined upper flights of said conveyor elements in a direction opposite to the direction imparted to said machine by said first-mentioned drive means and at a rate on the incline such that said flights have a horizontal component of movement generally equal to the rate of machine movement.

11. The mobile machine defined in claim 10 in which said bed assembly includes a bed frame, said support members having upper surface disposed in a plane in overlying spaced relation to said bed frame, said upper flights of the conveyor elements being supported by said top surfaces of the support members.

The operation of the device can be explained by reference to the descriptions contained in the specifications and drawings of the patent. The Schiltz invention provides for chains 27 having upper and lower flights 28 and 29 respectively. Each chain 27 is mounted upon a different one of the longitudinally extending beams 19. The chains 27 provide the primary supporting surface for the haystack during the loading and unloading operations. By driving the chains 27 forwardly at a rate generally equal to the rate the mover is going rearwardly, the upper flights of the chains remain relatively fixed with respect to the haystack. The chains 27 function to lift the haystack from the ground, providing a path for the support beams 19 to move under the haystack between the chains 27 and the ground; and the support beams 19 function to guide and support the chains as they are laid out underneath the haystack. The result is that the chains, beams, and speed relationship of the forward motion of the chains and the rearward motion of the machine, combine to lift the haystack vertically onto the mover bed without appreciable horizontal movement and without disarrangement of the haystack.

The Development of the Chain-Type Haystack Mover

Prior to the advent of the chain-type haystack mover, the device primarily used for moving haystack was a cable-type mover. Cable-type movers had been known in the art for many years. The structure of the cable-type device consisted of a frame supported by wheels; a tiltable bed on the frame; a winch, cable, and sling to load haystacks onto the bed; and a push-off to remove the stack.

When compared to the chain-type mover, operation of the cable-type mover is relatively difficult. The operator must back up to a haystack, tilt the bed of the mover, and then back up further until the mover is tight against the haystack. The operator must then get off the tractor or other conveyance and take the cable sling to the back of the stack. The winch cables are then pulled back and attached to the sling. The operator then places the winch in gear to wind the cables around the winch drums, which act in concert to pull the mover under the stack and to pull the stack onto the bed. To unload a haystack, the operator must release the winch, disconnect the cables from the sling at the back of the stack and remove the sling, hook the pull cables from the winch into the eye of the push-off cables, put the winch in gear, and start the power shaft. This will tighten the cables and pull the push-off to the rear of the mover to slide the stack off. After a stack is unloaded, the mover is readied for the next loading by cleaning off any residual hay, releasing the pull cables from the push-off, and moving the push-off back to its forward position; by hand in the earlier models, or by hydraulic means in the newer ones.

The evidence presented at trial demonstrated numerous

shortcomings in the cable-type movers. Many of the required operations are manual and require the operator to leave his conveyance. This can be especially burdensome in inclement weather. The sling, which must be manually positioned, can weigh anywhere from 40 to 150 pounds. Further, in normal operations, the sling can act to slice off the bottom portion of a haystack, leaving part of it in the field. To counter this result, testimony showed that the operator must sometimes stand on the sling to keep it in a lower position. This gives rise to definite safety hazards. Another drawback of this type of [754] mover are the cables themselves. The cables can sliver, and have been known to snap under tension. This also presents a definite safety hazard.

The chain-type mover, it is conceded, has numerous advantages over the cable-type. In operating a chain-type mover the operator need not leave the cab of his truck or tractor during loading or unloading. The chain-type mover eliminates the necessity of manual operations. To load a haystack with the device, the mover is backed up to a haystack, the bed is tilted, and the mover is started back under the stack. At this point the rearward motion of the truck or tractor and the forward motion of the chains on the bed act in concert to lift the stack onto the bed as the bed simultaneously moves further under the stack. Unloading the mover requires a mere reversal of this process. The operation of the chain-type mover is much quicker than that of the cable-type, and enables an operator to load and unload more stacks in a given period of time.

Validity

Defendants allege in their counterclaim for declaratory judgment that the Schiltz patent is invalid. They base their attack on (1) lack of novelty, (2) obviousness of the invention in light of the prior art, and (3) misconduct by Schiltz and his attorneys in the prosecution of the application before the Patent Office.

[1] The requirements for patentability of an invention are set out in 35 USC sections 101-103. To be patentable, the invention must be useful, novel, and nonobvious with respect to the prior art. All three of these requirements must be met by a valid patent. United States v. Adams, 383 U.S. 39, 148 USPQ 479 (1966); American Infra-Red Radiant Co. v. Lambert Industries, Inc., 360 F.2d 977, 149 USPQ 722 (8th Cir. 1966); L & A Products, Inc. v. Britt Tech Corp., 365 F.2d 83, 150 USPQ 770 (8th Cir. 1966).

[2] All patents carry a rebuttable presumption of validity when issued, and the burden of establishing invalidity rests on the party asserting it. 35 USC section 282. Invalidity of a patent must be shown by substantial evidence, not merely a preponderance. L & A Products, Inc. v. Britt Tech Corp., 365 F.2d 83 (8th Cir. 1966); Woodstream Corp. v. Herter's Inc., 446 F.2d 1143, 170 USPQ 380 (8th Cir. 1971). The party asserting the invalidity of a patent must not only overcome the statutory presumption of validity, but must also rebut whatever proof the patentee offers in defense of the validity of his claim. Woodstream Corp. v. Herter's Inc., 446 F.2d 1143, 170 USPQ 380 (8th Cir. 1971).

The utility of the Schiltz invention is undisputed. Serious questions are raised, however, as to its novelty and nonobviousness. Both of the statutory requirements necessitate an examination of the prior art with respect to haystack moving.

A. Prior Art

A substantial amount of evidence was introduced at trial to establish the state of the prior art related to the Schiltz invention. In addition to the five prior art patents cited by the Patent Office examiners,[1] Defendants introduced nine additional patents as pertinent, unconsidered prior art.[2] Of these latter nine, Defendants placed primary reliance upon five: Rogers, No. 2,418,726; Wangsness, No. 1,106,171; Bruce, No. 1,628,871; Lahman, No. 2,761,577; and Holcer, No. 3,120,887. Defendants also maintain that there were four prior inventors of the subject matter in suit,[3] and have concentrated on the machines allegedly built and used by Robert S. Rogers, Jr., and James Sutton. There is no serious dispute over the patents as evidence of prior art for the subject matter of the Schiltz invention. Plaintiff, however, seeks to reject the Sutton and Rogers machines from consideration as elements or evidence of the prior art. This court agrees that the Rogers and Sutton machines cannot be considered prior art in this case.

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[1] The patents cited by the Patent Office examiners, appearing in the file wrapper of the Schiltz patent are: Suverkrup, No. 2,156,438; Lisota, No. 2,408,862; McElihinney et al., No. 2,526,960; Hibbard, No. 2-951,578; Quint, No. 3,025,982. The Bruce Schiltz patent, No. 3,209,932, was removed as part of the prior art by a Rule 131 affidavit.

[2] The nine additional prior art patents cited by Defendants are: Rogers, No. 2,418,726; Lisota, No. 2,466,452; Wangsness, No. 1,106,161; Bruce, No. 1,628,871; Martin, No. 1,258;351; Lahman, No. 2,761,577; Bruce Schiltz, No. 3,209,932; Holcer, No. 3,120,887; French Patent No. 644,220. In addition, at trial Defendants sought to introduce additional prior art patents. Ruling was reserved as to their admissibility. This court has examined these patents also.

[3] The alleged prior inventors are James Sutton, Ivyl Kopecky, Levi Holcer, and Robert S. Rogers, Jr. In addition, Richard Rogers, Mrs. Glen Stokes, and George Engleman were alleged to have had prior knowledge of the invention.

[755]

1. *Rogers Machine*

Defendants placed great emphasis at trial and in their briefs on the Rogers machine. This device, a modification of the structure shown in Rogers patent, No. 2-418,726, was allegedly built and used by Mr. Rogers in the early 1940's in connection with his cotton gin operation. The alleged device, as built, differed substantially from the structure disclosed in the patent. Defendants assert that the machine, as allegedly constructed, was substantially the same as the device disclosed by the Schiltz patent, both in structure and in operation.

To prove the existence of the machine, Defendants rely primarily on the oral testimony of Mr. Rogers. The alleged machine was never disclosed in a patent application, nor in any publication. Rogers was the only person who could testify as to use of the machine. There were no photographs or sketches of the device which portray it in its completed form. Defendants did introduce numerous photographs of certain elements of the machine as they now exist. These photographs, however, show nothing more than the basic frame of the device, a length of chain, and the remains of certain components. The missing elements, and the parts of the structure alleged to be most comparable to the Schiltz invention, were filled in by the oral testimony of Mr. Rogers and through illustrative sketches drawn by Mr. Rogers for the purposes of this trial.

Unsupported oral testimony has long been considered suspect in patent cases. The Supreme Court addressed this problem in 1892.

> We now have to deal with certain unpatented devices, claimed to be complete anticipations of this patent, the existence and use of which are proven only by oral testimony. In view of the unsatisfactory character of such testimony, arising from the forgetfulness of witnesses, their liability to mistakes, their proneness to recollect things as the party calling them would have them recollect them, aside from the temptation to actual perjury, courts have not only imposed upon defendants the burden of proving such devices, but have required that the proof shall be clear, satisfactory and beyond a reasonable doubt. Witnesses whose memories are prodded by the eagerness of interested parties to elicit testimony favorable to themselves are not usually to be depended upon for accurate information. The very fact * * * that almost every important patent, from the cotton gin of Whitney to the one under consideration, has been attacked by the testimony of witnesses who imagined they had made similar discoveries long before the patentee had claimed to have invented his device, has tended to throw a certain amount of discredit upon all that class of evidence, and to demand that it be subjected to the closest scrutiny.

The Barbed Wire Patent, 143 U.S. 275, 284-85 (1892); see also Inglett & Co., v. Everglades Fertilizer Co., 255 F.2d 342, 117 USPQ 236 (5th Cir. 1958); United Parts Mfg. Co. v. Lee Motor Products, Inc., 266 F.2d 20, 121 USPQ 206 (6th Cir. 1959); 1 Deller's Walker on Patents section 63 (2d ed. 1964).

Plaintiff has challenged both the memory and veracity of Mr. Rogers. An examination of the testimony of Mr. Rogers leads this court to the conclusion that his oral testimony, and the sketches based upon his recollection, can be afforded little weight. This court finds that Defendants have failed to meet their burden of proof of the existence and use of the Rogers machine. It is therefore concluded that the Rogers machine cannot be considered as prior art under 35 USC sections 102 and 103.

2. *Sutton Machine*

The Sutton machine was built by Glen Stokes and James Sutton in 1957 for the purpose of providing a more efficient means for moving haystacks on Sutton's ranch. It is undisputed that the machine, as originally built, never loaded a haystack. There is some evidence that Sutton sought to get the machine repaired after it broke down when he tried to load a haystack with it, but the machine was never in fact repaired. After the initial unsuccessful attempt to get the machine to load a haystack, it was placed in various yards on the Sutton ranch, where it reposed until it was resurrected for this trial.

There was no patent application filed for the Sutton machine. The machine was never disclosed in a publicly disseminated document. Defendants contend, however, that despite the fact that the Sutton machine did not load any haystacks as originally constructed, it is still prior art under 35 USC section 102.

[3] Defendants, although never expressly stating which subsections of section 102 they are relying upon, apparently base this assertion on either section 102(a) or section 102(g). Initially, the criteria of section 102(a) must be distinguished from those of [756] section 102(g). As the Court of Claims has noted:

> The distinction is important since, unlike a defense under section 102(a) where prior knowledge and use must be "public" at the time the patented invention is made, prior invention under section 102(g) requires only that the invention be complete, i.e., conceived and reduced to practice, and not abandoned, suppressed or concealed.

International Glass Co. v. United States, 408 F.2d 395, 402, 159 USPQ 434, 440 (Ct. Cl. 1969) (Citations omitted). Bearing this distinction in mind, the issues concerning the Sutton machine become: (1) was the machine "reduced to practice", (2) whether the device was abandoned within the meaning of section 102(g), and (3) whether the machine was in prior public use within the requirements of section 102(a).

[4] The initial concern is whether the Sutton machine was ever reduced to practice. It has long been held that a device not reduced to practice cannot be considered as part of the prior art. As the Supreme Court observed in Coffin v. Ogden:

> The invention or discovery relied upon as a defense, must have been complete, and capable of producing the result sought to be accomplished * * *. If the thing were embryonic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent * * *. Until his work is *done,* the inventor has given nothing to the public.

Coffin v. Ogden, 85 U.S. (18 Wall.) 120, 124-25 (1873) (emphasis in original). Judge Learned Hand has stated the rule concisely:

> * * * another's experiment, imperfect and never perfected, will not serve either as an anticipation or as part of the prior art, for it has not served to enrich it. The patented invention does not become "known" by such use or sale, or by anything of which the art cannot take hold and make use as it stands.

Picard v. United Aircraft Corp., 128 F.2d 632, 635, 53 USPQ 563, 565-566 (2d Cir. 1942). Reduction to practice contemplates an actual and complete use of the particular invention for its intended purpose. Corona Cord Tire Co. v. Dovan Chemical Corp., 276 U.S. 358 (1928); see also Illinois Tool Works, Inc. v. Continental Can Co., 273 F.Supp. 94, 154 USPQ 401 (N.D. Ill. 1967).

Defendants do not contend that the Sutton machine ever loaded a haystack as the machine was originally built. They argue strenuously, however, that the proper test to be applied for reduction to practice is that the machine was so far developed that it could be made operable by the application of ordinary mechanical skill by one skilled in the art. An examination of the evidence in this case shows, however, that this court need not reach the question of whether this is the proper test to apply. Defendants have failed to demonstrate that any modifications to the Sutton machine were the result of the application of ordinary mechanical skill.

The Sutton machine taught the use of powered and non-powered rollers as the means of conveyance for a haystack during the loading and unloading operations. As so constructed, the machine would not operate to load a haystack. The machine was made operable only after numerous conveying chains were placed on top of the rollers. These chains replaced the rollers both as the means of conveyance and as the primary supporting surface for the haystack during loading and unloading. Although there was conflicting evidence on this point, this court finds that Plaintiff's expert was more convincing. The modifications to the Sutton machine were performed only after the Schiltz patent was well known to those engaged in the art. This court is convinced after an examination of the evidence concerning the Sutton machine that the addition of the chains to the rollers was contrary to the teachings of the Sutton machine, and represented a hindsight application of the teachings of Schiltz, obvious only after the fact with relation to Sutton's machine. It therefore must be concluded that under either test the Sutton machine was not reduced to practice as originally built. Even if this court were to find a reduction to practice, however, the Sutton machine would still fail to satisfy the criteria of sections 102(a) and 102(g) of Title 35.

[5] Section 102(g) requires that an invention not be "abandoned, suppressed, or concealed." The general rule under this section was well stated in International Glass Co., Inc. v. United States, 159 USPQ 434 (Ct. Cl. 1968).

> The courts have consistently held that an invention, though completed, is deemed abandoned, suppressed, or concealed if, within a reasonable time after completion, no steps are taken to make the invention publicly known. Thus, failure to file a patent application; to describe the invention in a publicly disseminated document; [757] or to use the invention publicly, have been held to constitute abandonment, suppression, or concealment.

159 USPQ at 441 (Citations omitted). The Sutton machine was built in 1957. Since that time the machine has never

been patented, nor has an application for patent been filed therefor. The machine was never described in a public document or publication. Although there is disagreement as to public use of the machine, this question is more properly considered with relation to section 102(a), which will be discussed, infra. On the basis of these facts, however, this court finds that even if the Sutton machine was reduced to practice, it was abandoned within the meaning of section 102(g).

[6] The Sutton machine also fails to satisfy the criteria of section 102(a) for consideration as prior art. As interpreted by the courts, this section requires that any prior use must have been "public". Simmons v. Hansen, 117 F.2d 49, 48 USPQ 345 (8th Cir. 1941). An experimental use is not a public use within the meaning of this section. See generally 1 Deller's Walker on Patents section 59, at 259 n. 12.

[7] The evidence in this case clearly shows that the use of the Sutton machine as originally built was merely an abortive, experimental use. The mere fact that the attempt to get the device to work was not concealed does not make the use public within the meaning of section 102(a). To reiterate the conclusions of Judge Hand, such use "will not serve either as an anticipation or as part of the prior art, for it has not served to enrich it." Picard v. United Aircraft Corp., 128 F.2d 632, 635, 53 USPQ 563, 565-566 (2d Cir. 1942). The Sutton machine does not satisfy the criteria of section 102(a) for consideration as prior art.

Novelty

As previously noted, it is uncontroverted that the Schiltz invention has utility within the meaning of 35 USC section 101. In order for the invention to be patentable, however, it must also possess novelty. 35 USC section 102.

[8] The general rule under this section is stated in Deller's Walker on Patents:

> In order to negative novelty, or to anticipate an invention, it is necessary that all the elements of the invention or their equivalents be found in one single description or structure where they do substantially the same work in substantially the same way.

1 Deller's Walker on Patents section 57, at 242 (2d ed. 1964). Defendants have experienced some difficulty with the distinction between the proof required by section 102, and that required by section 103. The correct rule is that, while prior art can be combined to demonstrate obviousness under section 103, in order to anticipate under section 102 a single prior reference must disclose the invention in question. See Woodstream Corp. v. Herter's Inc., 446 F.2d 1143, 1151, 170 USPQ 380, 385-386 (8th Cir. 1971).

Defendants asserted three prior anticipations of the Schiltz invention: The Bruce patent, and the Sutton and Rogers machines. As previously discussed, the Sutton and Rogers machines cannot be considered prior art in this suit. Furthermore, although Defendants argue in their brief that the Bruce patent is a complete anticipation of the invention in suit, in the same brief they concede that Bruce lacks element (d) of claim 10 of the patent in suit. This also is sufficient to negative anticipation. Defendants also failed to introduce evidence to show that the Bruce patent could be made to perform substantially the same functions as the Schiltz invetion in substantially the same way, either as the patent reads or with the addition of changes requiring only ordinary mechanical skill.

This court has examined all of the prior art patents in evidence in this case. Based upon this examination, this court finds that none of the patents is an anticipation of the invention in suit. The Schiltz invention is novel under 35 USC section 102.

Nonobviousness

This court, having determined that the Schiltz invention is both useful and novel, must now determine whether the development would have been obvious to one of ordinary skill in the art, in light of the prior art. 35 USC section 103.

> Under (section) 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the partinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 466-467 (1966).

[758]

A. Scope and Content of Prior Art

[9] It is conceded that the various mechanical components that make up the Schiltz invention are present in the prior art.

> Courts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements.

A&P Tea Co. v. Supermarket Corp., 340 U.S. 147, 152, 87 USPQ 303, 305-306 (1950); see also Anderson's-Black Rock v. Pavement Co., 396 U.S. 57 (1960); Sakraida v. Ag Pro, Inc., U.S. , 189 USPQ 449 (Apr. 20, 1976). The fact that the component elements are old in the art, however, is not alone dispositive of the issue. As Judge Learned Hand observed:

> All machines are made up of the same elements; rods, pawls, pitmans, journals, toggles, gears, cams, and the like, all acting their parts as they always do and always must * * *. But the elements are capable of an infinity of permutations, and the selection of that group which proves serviceable to a given need may require a high degree of originality. It is that act of selection which is the invention; and it must be beyond the capacity of common-place imagination.

Woodstream Corp. v. Herter's Inc., 446 F.2d 1143, 1156-57, 170 USPQ 380, 389-391 (8th Cir. 1971), *quoting* B. G. Corp. v. Walter Kidde & Co., 79 F.2d 20, 22, 26 USPQ 288, 289-290 (2d Cir. 1935). The issue to be determined, therefore, is whether the development of the Schiltz invention was obvious; not whether the various elements which make up the device can be found in isolation in the prior art.

The evidence in this case discloses that, prior to the Schiltz invention, the device used for moving haystacks was the cable-type mover. It is not seriously disputed that the prior art disclosed no chain-type device for moving haystacks. Defendants contend, however, that by combining prior art references the Schiltz device can be created.

The prior art relied upon by Defendants for this purpose consists primarily of the Lahman, Rogers, Wangsness, Holcer, and Bruce patents. It is clear that no one of these patents alone teaches the Schiltz invention.

The Lahman patent discloses the conventional cable-type haystack mover. The primary use of this patent by Defendants is to show the use of a long, wide, tiltable bed upon which a haystack may be loaded. It is undisputed that the device as claimed lacks elements (f), (g), and (h) of claim 10 of the Schiltz patent.

The Rogers patent teaches a device adapted for the loading and unloading of logs. A reading of the patent teaches the use of "fingers" to place logs on the conveyor chains on a tilted ramp leading to the bed assembly. The ramp was not designed for supporting objects during transport.

The Wangsness patent shows a conveying loader to be used in connection with wagons, carts, or other vehicles. The specifications of the patent disclose the purpose of the invention as "relating to loaders and more particularly to devices including means for gathering and conveying hay and grain in the field * * *." Defendants admit that elements (d) and (h) of claim 10 of the Schiltz patent are not disclosed by Wangsness.

The Holcer patent is relied upon as teaching the speed relationship disclosed by claim 10(h) of the Schiltz patent. Claim 1 of Holcer claims "means drivingly connecting said drive means to said conveyor assemblies for driving said flexible members at a speed approximately equal to the ground speed of said frame." It is undisputed that the structure of the Holcer invention does not disclose the Schiltz device.

The Bruce patent addresses a fertilizer or straw spreader

which may be pushed into a pile of this material to withdraw a certain amount for spreading. Bruce lacks elements (d) and (h) of claim 10 of the Schiltz invention.

An examination of the patents primarily relied upon by Defendants shows that none of the inventions disclosed by the patents with the exception of the Lahman patent, relates to the moving of haystacks. While some of the patents refer to the moving of hay, this hay consists either of loose hay in the field, or of bales of hay. The Defendants contend, however, that minor modifications of the prior art would have produced the Schiltz invention. At this point, this court merely finds that the prior art patents introduced in evidence in this case show the scope and content of the prior art related to the Schiltz invention.

B. Level of Ordinary Skill in the Art

[10] Another initial determination which must be made under the holding in Graham is the level of ordinary skill in the art.

> A finite quantitative definition of this ordinarily skilled person is difficult at best * * *. Rather the various prior art approaches employed, the types of problems [759] encountered in the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field are among the factors which will ofttimes aid in developing a picture of what is the level of skill of the ordinary person in the art.

Jacobson Brothers, Inc. v. United States, 512 F.2d 1065, 1070-71, 184 USPQ 181, 184-186 (Ct. Cl. 1975). The

Jacobson court went on to note that commercial success and failure of others may be useful as real-life indicia of the level of ordinary skill in the art, as well as being secondary proof of the validity of a patent. 512 F.2d, at 1071, 184 USPQ 185-186.

Defendants introduced little evidence specifically directed to the issue of the level of ordinary skill in the art. Nonetheless, an examination of the evidence in toto discloses to this court sufficient bases from which to make the required finding.

[11] The evidence shows that the prior art approach to haystack moving relied exclusively on the cable-type mover, in one form or another, since 1897. While numerous advances had been made in the cable-type mover over the years, Defendants could point to no successful variation on that theme prior to the Schiltz invention. The prior attempts of Sutton and Kopecky to automate haystack moving had met with failure. The majority of people working in this area were not technicians and engineers; rather, they were farmers, ranchers, blacksmiths, and custom haystack movers. The formal educational level of these persons was generally low. An examination of all of the evidence in this case convinces this court that the level of ordinary skill in the art was relatively low.

C. Differences Between the Schiltz Invention and the Prior Art

As previously discussed, there are easily apparent differences between the Schiltz invention and each of the individual prior art patents in evidence in this case. The only patent directed to the problem of moving haystacks is the Lahman patent. The differences between this device and the Schiltz invention are clear, and have been thoroughly examined in this opinion. The remainder of the inventions disclosed by the patents relate to various types of conveyor systems for use in loading and conveying things other than haystacks. While there is conflicting expert testimony on the point, this court finds Plaintiff's experts more convincing after independently examining the prior art. This court finds that, with the exception of Lahman, none of the patents in evidence discloses a device capable of automatically loading a haystack without substantial modification.

Another difference between the Schiltz invention and the prior art, upon which Plaintiff places great emphasis, is the difference in frictional characteristics between the Schiltz invention and the prior art cable-type movers. This difference comes about because of the concerted action of the support beams, conveying chains, and speed relationship disclosed by the Schiltz patent. In simplified terms, the result of this concerted action is that the primary support chains remain relatively fixed with respect to the bottom of the haystack. The result of this is that more of the haystack can be removed from the field, and that the haystack will be disarranged insubstantially during the loading and unloading operation. This operation is in contrast to that of the cable-type mover, where the haystack is pulled onto the bed of the mover during loading and pushed off during unloading. This action creates a sliding friction which tends to more seriously disarrange the haystack. Plaintiff posits that this is a significant advantage over the prior art movers, and was not shown by any of the prior art patents.

D. *Conclusions on Obviousness*

[12] It is well settled that a patent cannot be held valid for a development which would have been obvious to one of ordinary skill in the art in light of the prior art. Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966); American Infra-Red Radiant Co. v. Lambert Industries, Inc., 360 F.2d 977, 149 USPQ 722 (8th Cir. 1966). Prior art may be combined for purposes of demonstrating obviousness. As noted by the Eighth Circuit Court of Appeals, the test of obviousness is the *only* correct test to be applied in determining whether a new combination of known elements amounts to invention. American Infra-Red Radiant Co. v. Lambert Industries, Inc., 360 F.2d 977, 149 USPQ 722 (8th Cir. 1966).

[13] It is incumbent upon this court, however, when determining the issue of obviousness, to avoid slipping into the use of hindsight. Graham v. John Deere Co., 383 U.S. 1 (1966), 148 USPQ 459. The fact that all the elements of the claimed invention may be disclosed in the prior art does not, of itself, negative patentability. Dann v. Johnston, U.S. ,189 USPQ 257 [760] (Mar. 31, 1976); Deepsouth Packing Co., Inc. v. Laitram Corp., 406 U.S. 518, 173 USPQ 769 (1972). As the court observed in Woodstream:

> In retrospect, many creative developments seem commonplace. The critical question under *Graham* is whether *at the time of the invention* the subject would have been obvious to one skilled in the art.

Woodstream Corp. v. Herter's, Inc., 446 F.2d 1143, 1156, 170 USPQ 380, 389-390 (8th Cir. 1971) (emphasis added). When prior art references are combined to challenge

the patentability of an invention the test to be applied is: Does the prior art suggest to one ordinarily skilled in the art doing what the applicant has done? 2 Deller's Walker on Patents section 110, at 220 (2d ed. 1964); see also United States v. Adams, 383 U.S. 39, 50, 148 USPQ 479, 483 (1966); Dann v. Johnston, U.S. , 189 USPQ 257 (Mar. 31, 1976).

Viewing the prior art as a whole, it cannot be said that the prior art would have suggested to the ordinary man skilled in the art the developments achieved by Schiltz. Although there is conflict in the expert testimony on this point, this court finds the testimony of Plaintiff's experts more convincing. Indeed, two of Defendants' experts gave testimony which supports the finding of nonobviousness. Mr. Wolfe and Mr. Lahman were actively engaged in research and development in the haystack moving industry. At the time they were working, all of the additional prior art patents cited by Defendants were available. Nevertheless, neither of these men developed a concept similar to that of Schiltz. Wolfe's last patent application, filed while he was working on haystack mover development for Farmhand in 1957, was for a cable-type mover. Lahman, even after seeing an operating mover based on the Schiltz disclosures, misunderstood the function of the chains on the device, and was unsuccessful in his early attempts to develop a chain-type mover. Both of these men were possessed of more than ordinary skill in the art; yet the subject matter of the Schiltz invention was not obvious to them.

Perhaps better evidence of the nonobviousness of the subject matter of the Schiltz invention to those of ordinary skill in the art can be derived from the Sutton-Stokes attempt. The Sutton machine was clearly an attempt to improve upon cable-type movers. It was equally clearly a failure. Sutton and Stokes failed to recognize the advantages of keeping the surface of the conveying elements relatively fixed with respect to the bottom of the haystack during a loading operation. As a result, the Sutton machine never loaded a haystack, and the attempt was abandoned. It was only after the teachings of Schiltz became well known that the Sutton machine was made to function; and the modifications to this machine to achieve success were obvious only after Schiltz.

Defendants have not demonstrated to this court that the achievements of Schiltz were obvious in light of the prior art patents in evidence in this case. Defendants introduced many graphic illustrations to demonstrate how the prior art could be combined to create the invention in suit. At no point, however, did Defendants show that these combinations would have been obvious. As noted above, the proper test to be applied in a suit involving a combination of elements known in the art is whether the prior art as a whole would suggest doing what an applicant has done. Defendants have offered no evidence to show how, short of the exercise of an inventive faculty or of hindsight, one would determine which of the various elements to combine to create a device for the purpose addressed by the Schiltz patent.

[14] Even assuming the Defendants have introduced credible evidence of obviousness, this court finds that they have failed to introduce sufficient evidence to carry their burden of proof. A patent is presumed valid when issued. 35 USC section 282. This presumption is rebuttable, but must be overcome by substantial evidence negating one of the three requisites of patentability. L&A Products v. Britt Tech Corp., 365 F.2d 83, 150 USPQ 770 (8th Cir. 1966); Woodstream Corp. v. Herter's Inc., 446 F.2d 1143, 170 USPQ 380 (8th Cir. 1971).

[15] Defendants rely on the rule that the presentation to the court of prior art not disclosed to the Patent Office weakens or destroys the presumption of validity. American Infra-Red Radiant Co. v. Lambert Industries, Inc., 360 F.2d 977, 149 USPQ 722 (8th Cir. 1966). The cases relying on this reasoning, however, require that the uncited prior art must be pertinent to the subject matter in issue. Ralston Purina Co. v. General Foods Corp., 442 F.2d 389, 170 USPQ 202 (8th Cir. 1971). Furthermore, the mere fact that a patent was not cited should not be sufficient to destroy the presumption of validity. It has been held that a search record is prima facie evidence that all patents contained in the classes and subclasses searched were examined. Deering Milliken Research Corp. v. Beaunit [761] Corp., 382 F.Supp. 403, 182 USPQ 421 (W.D.N.C. 1974). The evidence in this case shows that all the patents introduced by Defendants as pertinent, unconsidered prior art were contained in the classes searched by the Patent Office examiners. Defendants assert that these patents were overlooked by the examiners. This court, considering the evidence of the experience of the examiners involved, finds that it is more likely that the examiners chose not to cite the patents, finding them no more illuminating than those cited in the file wrapper of the patent in suit.

[16] Even if this court were to conclude that the examiners overlooked these patents, this will not necessarily destroy the presumption of validity. As the court observed in Illinois Tool Works, Inc. v. Continental Can Co.:

> Where the Patent Office cites some prior art, but not other equally relevant and similar prior art, the presumption of validity is weakened only to the extent that

> the teaching of the uncited art is not disclosed in the cited art.

Illinois Tool Works, Inc. v. Continental Can Co., 273 F.Supp. 94, 111, 154 USPQ 401, 415-416 (N.D. Ill. 1967). The Seventh Circuit has gone even further, holding that the introduction of additional prior art similar to that considered by the Patent Office examiners strengthens the presumption of the validity of the patent. TSC Industries, Inc. v. International Harvester Co., 406 F.2d 53, 160 USPQ 34 (7th Cir. 1968). An examination of the patents cited by Defendants convinces this court that they are no more pertinent to the subject matter of the patent in suit than those cited by the examiners. Defendants have failed to destroy the statutory presumption of the validity of the patent through the introduction of prior unconsidered art.

This court has carefully examined all of the prior art in this case. On the basis of this examination, and considering the testimony of the witnesses at trial, it must be concluded that Defendants have failed to carry their burden of proving the invalidity of the Schiltz patent by substantial evidence. This court concludes that the subject matter of the Schiltz invention was not obvious to one of ordinary skill in the art at the time of invention. None of the cited prior art disclosed devices designed for moving large haystacks, or similar objects, through the use of chain conveyors. Defendants have failed to show by substantial evidence that the prior art disclosures could be combined and modified by one of ordinary skill in the art to achieve the result of the Schiltz patent.

E. *Secondary Considerations*

[17] The conclusion that the invention of Boyd Schiltz was not obvious is buttressed by numerous secondary considerations. The Court in Graham recognized that factors such as commercial success of the invention, the solution to long-felt needs by the invention, the failure of others to arrive at the solution, among others, may be considered as indicia of obviousness or nonobviousness.

1. *Commercial Success*

[18] Plaintiff has introduced evidence of the commercial success it has enjoyed since it acquired the patent in suit. Within five years of the date of invention, the chain-type haystack mover was taking over the market, despite the fact that it was more expensive than the cable-type mover. Defendant's brief attempts to attribute this success to factors other than the invention in suit. While certain factors such as the stability of Lahman's sales of the cable-type mover may go to minimize the argument of commercial success, most of the arguments advanced against the invention as the cause of the commercial success of Farmhand are unconvincing. This court cannot understand why even if the economic factors were such that more farmers and ranchers would buy more haystack movers, the purchasers would buy the more expensive chain-type movers unless there was some advantage to this device as compared to the cable-type. This court is convinced that the reason for the commercial success of the Schiltz device was its comparative advantages over the cable-type mover.

2. *Long-Felt Need*

[19] Another indicia of the nonobviousness of the invention was the solution to the long-felt need for a safer and more convenient means for moving haystacks. The evidence shows that Farmhand's employees (including Defendants' expert Mr. Wolfe), and Lahman, among others, had long been attempting to develop improvements in the cable-type haystack mover. The activities of Sutton and Kopecky also bear witness to attempts to improve the art of haystack moving. The age and volume of the prior art cited in this case also demonstrates the desire to improve the art. See Deering Milliken Research Corp. v. Beaunit Corp., 382 F.Supp. 403, 182 USPQ 421 (W.D.N.C. 1974). The advent of the Schiltz invention solved the needs felt by [762] persons working in this area. As Lahman himself admitted, the Schiltz device provided a safe, quick, and efficient device whereby one person could load and unload haystacks without leaving the seat of his conveyance.

3. *No-Unknown or Unavailable Element Required*

[20] An additional indicator of the nonobviousness of the invention in suit is the fact that all of the elements needed to produce the device patented by Schiltz were readily available. This factor has been recognized as bearing on the obviousness of the invention. Lyon v. Bausch & Lomb Optical Co., 224 F.2d 530, 106 USPQ 1 (2d Cir. 1955); B. G. Corp. v. Walter Kidde & Co., 79 F.2d 20, 26 USPQ 288 (2d Cir. 1935). The fact that nothing unknown was needed to create the invention, and that the invention was still not forthcoming, is evidence of the fact that the invention was nonobvious, and required the exercise of an inventive art.

4. *Failure of Others*

[21] Failure of others, attempting to improve upon the prior art, to arrive at a solution comparable to the invention in question is further evidence of the nonobviousness of the invention, and may serve to strengthen the presumption of validity of the patent. Reeves Instrument Corp. v. Beckman Instruments, Inc., 444 F.2d 263, 170 USPQ 74 (8th Cir. 1971). This court has received evidence of two prior failures of persons attempting to improve the art of haystack moving by abandoning the use of cables. Kopecky attempted to build a self-loading haystack mover. The device would not function, and he converted it into a cable-type mover. Sutton's attempt has been previously discussed. This device was also an anbandoned failure. Defendants have been unable to automate the haystack mover.

5. *Asquiescence in Validity by Others*

[22] The fact that others in the industry acquiesce in the validity of the patent at expense to themselves may be considered evidence of nonobviousness and validity of the patent. Shaw v. E.B. & A.C. Whiting Co., Inc., 417 F.2d 1097, 163 USPQ 580 (2d Cir. 1969). The evidence in this case showed that Plaintiff has received in excess of $200,000 in royalties from its licensing of the patent in suit. Perhaps even more persuasive of the acquiescence in validity by others is the fact that Craven never contested the validity of the patent when sued for infringement. Farmhand, Inc. v. Craven, 455 F.2d 609, 173 USPQ 1 (8th Cir. 1972).

[23] Defendants are correct in pointing out that there may be sound economic reasons for paying royalties and avoiding a costly patent suit, especially when someone else

is challenging the patent in the courts. They fail to successfully explain, however, why Craven, when confronted with an infringement action, chose to admit the validity of the patent and proceed only on the issue of infringement. While this may not be strong evidence of the validity of the patent, this court must consider it of at least some weight in support of the validity of the patent.

F. Miscellaneous Defenses

Defendants have also alleged that the Schiltz patent should be found invalid because of Plaintiff's alleged lack of candor with the Patent Office during the prosecution of his application. Specifically, it is alleged that Schiltz and his attorneys failed to disclose the Lahman patent, the Sutton machine, the alleged contributions of Bruce Schiltz and Ivyl Kopecky, and the alleged best mode of the invention.

[24] It is well settled that failure to use full candor with the Patent Office in the prosecution of an application for a patent may be raised as a defense to the enforceability of the patent. Precision Instrument Mfg. v. Automotive Maintenance Machinery Co., 324 U.S. 806, 65 USPQ 133 (1945). As this standard has been recently interpreted by the Eighth Circuit Court of Appeals, however, more than a merely good faith or innocent non-disclosure must be shown; intent to deceive must be proved. Pfizer, Inc. v. International Rectifier Corp., 538 F.2d 180, 190 USPQ 273 (8th Cir. 1976).

[25] This court finds that any non-disclosure of the Lahman patent and the Sutton machine were in good faith, and will not give rise to the defense. The evidence shows that the Lahman patent was within the classes searched by the Patent Office examiners, and that there was no showing of an affirmative attempt to draw the examiners' attention

away from the Lahman patent as part of the prior art. In fact, the Schiltz patent application specifically mentions the prior art cable-type movers and discusses their drawbacks. The Sutton machine was not disclosed to the Patent Office because Schiltz did not think the device had any bearing on what he sought to patent. As previously discussed, the Sutton machine was an abandoned experiment [763] which cannot be considered part of the prior art. The deposition testimony of the examiners discloses their familiarity with devices similar to the Sutton machine. These facts lead this court to the conclusion that failure to disclose the Lahman patent and the Sutton machine will not give rise to the unenforceability defense.

Defendants also urge that Schiltz and his attorneys failed to disclose the contributions of Bruce Schiltz and Ivyl Kopecky. Defendants have alleged that Bruce Schiltz and Ivyl Kopecky are prior inventors of the subjective matter of the patent in suit. They also allege that Kopecky is a co-inventor by reason of the "Kopecky Drive" which was added to the Schiltz device prior to the date when the patent was issued. Finally, they contend that by failing to specifically note the "Kopecky Drive" in his application, Schiltz failed to set forth the best mode of operation for his invention.

The evidence presented by Defendants in support of their allegations that Bruce Schiltz and Ivyl Kopecky were prior inventors is unconvincing at best. The main emphasis of Defendants' argument is placed on the alleged prior conception of Bruce Schiltz. The only evidence which was offered to prove the fact of prior conception or invention was the unsupported deposition testimony of Bruce Schiltz. There were no drawings of his alleged conception. There was no evidence presented of any attempt to reduce this conception to practice. This court finds that Defendants have failed to prove that Bruce Schiltz was a prior inventor of the subject matter of the invention in suit, and have failed to prove that he made any contribution to the invention which should have been disclosed to the Patent Office.

Defendants' contentions relating to Ivyl Kopecky concern the development and use of the "Kopecky Drive" on the Schiltz device. From the evidence, this court finds that Kopecky was neither a prior inventor nor a co-inventor of the subject matter of the Schiltz invention. The addition of the "Kopecky Drive" is part of the best mode of operation of the Schiltz invention. 35 USC section 112 requires that:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most clearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

* * *

The Schiltz patent specifically provides:

> Having noted that means must be provided in accordance with the present invention for moving the conveyor chains in unison on the support members 19, it will be appreciated that *various suitable driving arrangements may be provided to accomplish such movements.* (emphasis added)

There has been no evidence introduced to show that the disclosure of the patent is insufficient to enable one skilled in

the art to reduce the invention to practice. Plaintiff's evidence shows that Schiltz had successfully used his machine for loading haystacks prior to the addition of the "Kopecky Drive." There is no evidence that Schiltz attempted to conceal anything, or to deceive the Patent Office or the public by failing to set forth the "Kopecky Drive" as the best mode for his invention. See Flick-Reedy Corp. v. Hydro-Line Mfg. Co., 351 F.2d 546, 550-51, 146 USPQ 694, 696-698 (7th Cir. 1965). There is no convincing evidence to show that the "Kopecky Drive" was in fact the best mode of operation of the Schiltz invention. This court concludes that Defendants' arguments based on the Kopecky contributions must fall as not being sustained by the evidence.

This court concludes that Defendants have failed to make out a defense based on misconduct and lack of candor before the Patent Office. Defendants have failed to carry their burden of proof to show any contribution by Bruce Schiltz or Ivyl Kopecky sufficient to invalidate the patent.

Defendants have also alleged that Boyd Schiltz filed a knowingly inaccurate and incomplete affidavit under Rule 131 in the prosecution of his application before the Patent Office. This defense is apparently based upon the assertion that the Schiltz device had not been successfully reduced to practice by August 12, 1963, as testified to in the affidavit. Defendants have introduced no convincing evidence in support of this allegation. Plaintiff, on the other hand, has introduced the deposition testimony of Ivyl Kopecky, who stated that he witnessed a successful use of the Schiltz device on approximately August 5-8, 1963, on the Bill Rodman farm. After considering the evidence, this court finds that the Schiltz [764] invention was successfully reduced to practice prior to August 12, 1963. It is therefore concluded that Defendant's assertion of bad faith in the Rule 131 affidavit has not been proved.

Finally, Defendants moved for summary judgment immediately prior to trial. This motion was based on Muncie Gear Works, Inc. v. Outboard Marine & Mfg. Co., 315 U.S. 759, 53 USPQ 1 (1942), and 35 USC sections 102(b) and 112. The basis for Defendants' motion was that the claims in issue did not set forth the fact that the conveyor chains on the Schiltz invention might move slower than the rearward speed of the mover; and that the addition of the claims in issue, which are allegedly broader than the original claims, came after the Schiltz device had been in public use for more than one year.

Defendants' contentions are not well founded. After an examination of the file wrapper of the Schiltz patent, this court finds that claims 10 and 11 are supported by the original specification filed with the Patent Office.

Claim 3(g) of the original application recited:

> (g) second drive means connected to said first drive means and operative to impart concerted movement to the upper flights of said conveyor chains in a direction opposite to the direction of the generally longitudinal movement imparted to said machine by said first drive means and also at a rate generally equal to said machine movement.

This court agrees with the analysis applied by the court in Farmhand, Inc. v. Craven, 455 F.2d 609, 173 USPQ 1 (8th Cir. 1972):

> Defendant posits the argument that if the horizontal movement of the chain conveyor is to be generally equal to the backward movement of the truck, then in the inclined loading position the chains must go at a faster rate than the truck. This reads the specification to mean that the roller chains *must* move faster in order to achieve exact mathematical equality between the truck and the chains on the horizontal. The specifications do not require this.

455 F.2d, at 610 173 USPQ 2 (emphasis in original). As interpreted by the court in Craven, this statement in the original specification supports chain movement slightly greater than or slightly slower than the backup speed of the mover. This court concludes that Defendants' sections 102(b) and 112 and Muncie Gear defenses must fall as unsupported by the evidence.

Infringement

Having found United States Patent No. 3,298,550 valid and enforceable, this court must now determine whether the patent is infringed by the Lahman haystack movers. Defendants admit that the Lahman movers have all the elements of claim 10 of the Schiltz patent, with the exception of element (h). They also admit that infringement under claim 11 will turn on the finding as to claim 10. Defendants contend that the Lahman movers do not infringe the Schiltz patent because they do not have, or need, element (h) of claim 10.

The tests for infringement were set out by the Supreme Court in Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 85 USPQ 328 (1950):

> In determining whether an accused device or composition infringed a valid patent, resort must be had in the

> first instance to the words of the claim. If the accused matter falls clearly within the claim, infringement is made out and that is the end of it.
>
> But courts have also recognized that to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing. Such a limitation would leave room for—indeed encourage—the unscrupulous copyist to make unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied material outside the claim, and hence outside the reach of law. One who seeks to pirate an invention, like one who seeks to pirate a copyrighted book or play, may be expected to introduce minor variations to conceal and shelter the piracy. Outright and forthright duplication is a dull and very rare type of infringement. To prohibit no other would place the inventor at the mercy of verbalism and would be subordinating substance to form. It would deprive him of the benefit of his invention and would foster concealment rather than disclosure of inventions, which is one of the primary purposes of the patent system.

339 U.S., at 607, 85 USPQ at 330. The test in the Eighth Circuit was expressed in Craven, a case involving the patent which is the subject of the instant action. Applying the equivalency test in this circuit entails [765] making the determination that, the infringing device must be substantially indentical with the one alleged to be infringed in (1) the result attained; (2) the means of attaining that result; and (3) the manner in which its different parts operate and cooperate to produce that result.

455 F.2d, at 611, 173 USPQ at 2-3. (Citations omitted.)

Applying these tests to the facts in this case, it is the conclusion of this court that the Lahman haystack movers infringe claims 10 and 11 of United States Patent No. 3,298,550. Defendants' contention that the Lahman mover lacks the first drive means of element (h) of claim 10 cannot be accepted. Defendants' evidence shows that in normal operation of the Lahman mover a tractor or other means of conveyance is essential. This is the essence of the first drive means. To argue that the trailer-type mover does not use a first drive means in the loading operations is to ignore the realities of the situation. The evidence shows that the Lahman mover is sold to be used with a tractor or other conveyance. The operator's manual for the Lahman mover discloses the cooperative arrangement between the first drive means conveyance and the trailer loader during the loading operation. This court finds that the Lahman mover in operation has the first drive means and cooperative speed relationship of element (h) of claim 10 of the Schiltz patent. It is concluded that the Lahman mover literally infringes claims 10 and 11 of the Schiltz patent, No. 3,298,550.

Even if no literal infringement were found, the Lahman mover must still be found to infringe the Schiltz patent under the doctrine of equivalents. Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 85 USPQ 328 (1950). Defendants do not argue that the Lahman mover differs from the Schiltz invention in the means used and the results attained. Their argument centers on the way the various parts function to attain the result. This was the same argument advanced in Farmhand, Inc. v. Craven, 455 F.2d 609, 173 USPQ 1 (8th Cir. 1972). This court finds the reasoning of the decision in that case applicable here. Defendants argue that element (h) of claim 10 is unnecessary to the Lahman machine. This court finds that this contention misreads the claims of the patent in suit. The Lahman haystack mover, as actually operated, makes full use of the first drive means and speed relationship disclosed in claim 10(h). Defendants' witness Mr. Eggleston, who owns and operates a Lahman chain-type mover, testified on cross examination that in the loading process the conveyance is driven backward to push the trailer under the haystack, and that the speed relationship between the rearward movement of the conveyance and the forward movement of the conveying chains was approximately equal. This court has also examined films of the operation of these devices, and attended a demonstration of their use. After considering all the evidence, this court finds that the Lahman haystack mover does the same work, in substantially the same way, to achieve the same result, as the Schiltz mover. It must be concluded, therefore, that the Lahman chain-type haystack mover infringes United States Patent No. 3,298,550.

The foregoing memorandum decision constitutes the court's findings of fact and conclusions of law pursuant to Rule 52 of the Rules of Civil Procedure.

APPENDIX—B

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[597]

Court of Appeals, Eighth Circuit

Farmhand, Inc.

v. Lahman Manufacturing Company, Inc. et al.
No. 77-1072 Decided Jan. 11, 1978

As amended Jan. 20, 1978

PATENTS

1. Infringement—Substitution of equivalents—In general (§39.751)

Equivalency test in Eighth Circuit entails making determination that accused device is substantially identical with one alleged to be infringed in result attained, means of attaining that result, and manner in which its different parts operate and cooperate to produce that result.

2. Patentability—In general (§51.01)

Pleading and practice in courts—Burden of proof—Validity (§53.138)

Presumption from patent grant—Weight of (§55.9)

Essentials of patentability are invention or discovery, usefulness, and novelty; patent is presumptively valid and burden of proving invalidity of patent by at least substantial evidence is on party who asserts it.

3. Defenses—In General (§30.01)

Presumption from patent grant—In general (§55.1)

35 U.S.C. 282 specifies that patent is presumptively valid and sets out defenses generally available in patent infringement suits, which are non-infringement, lack of responsibility for infringement or unenforceability, invalidity of patent or of any particular claim in suit on any ground specified in Part II of Patent Act as condition of patentability, invalidity of patent or claim for noncompliance with 35 U.S.C. 112 or 251, and any other fact or act made defense under Patent Act.

Particular patents—Haystack Transporting

3,298,550, Schiltz, Haystack Transporting Device, claims 10 and 11 infringed.

Appeal from District Court for District of South Dakota, Nichol, Ch. J.; 192 USPQ 749.

Actions by Farmhand, Inc., against Lahman Manufacturing Company, Inc., and Robert Anderson, doing business as Platte Implement, for patent infringement, in which defendants counterclaim for declaratory judgment of patent invalidity and for violation of antitrust laws, and by Lahman Manufacturing Company, Inc., against Boyd D. Schiltz (third-party defendant) for violation of antitrust laws. From judgment for plaintiff, defendants appeal. Affirmed.

Kenneth D. Siegfried, and Schroeder, Siegfried, Ryan & Vidas, both of Minneapolis, Minn., and Joe L. Maynes, and Maynes, Tonner & Maynes, both of Aberdeen, S.D., for appellants,

John D. Gould, Alan G. Carlson, and Merchant, Gould, Smith, Edell, Welter & Schmidt, P.A., all of Minneapolis, Minn., for appellee.

Before Bright, Webster, and Henley, Circuit Judges.

Henley, Circuit Judge.

[598] This patent infringement suit is before us on appeal from the United States District Court for the District of South Dakota.

Plaintiff, Farmhand, Inc., is a Delaware corporation with its principal place of business in Hopkins, Minnesota. Plaintiff is engaged in the business of manufacturing and selling farm implements and is the owner by assignment of United States Letters Patent No. 3,298,550 issued in 1967 to Boyd D. Schiltz. The patent describes and covers a device whereby large haystacks can be loaded on trailers or trucks, transported to a desired destination, and then unloaded by the use of a chain type hoisting apparatus.

Defendant, Lahman Manufacturing Company, Inc., is a South Dakota corporation with its principal place of business in Heckla, South Dakota. Like plaintiff, it is engaged also in the manufacture of farm implements, including a stack moving device which plaintiff contends infringes the Schiltz patent.

The other defendant, Robert Anderson, is an individual who does business as Platte Implement in Platte, South Dakota. During the suit period he sold allegedly infringing machines which he had purchased from Lahman.

Claiming that the Lahman machine infringed Claims 10 and 11 of its patent, plaintiff commenced this action against Lahman and Anderson in 1972. The defendants answered and filed counterclaims against plaintiff seeking a declaratory judgment to the effect that the patent in suit is invalid and seeking damages for alleged violations of the federal antitrust laws, 15 U.S.C. §§1-15. A third party complaint was also filed against the inventor, Schiltz. In due course the antitrust claims of the defendants against plaintiff and Schiltz were severed from the plaintiff's patent infringement claims and were ultimately dismissed summarily. The severed claims are not involved in this appeal.

In its complaint Farmhand sought injunctive relief and treble damages, together with an attorney's fees and costs. It appears that by agreement determination of the amount of damages, if any, sustained by plaintiff was postponed pending the district court's decision on the underlying issues of patent validity and infringement.

The case was the subject of a bench trial of eighteen days duration which was conducted by Chief District Judge Fred J. Nichol. On September 27, 1976 Judge Nichol filed a memorandum opinion incorporating his findings of fact and conclusions of law. Farmhand, Inc. v. Lahman Mfg. Co., 192 USPQ 749 (1976). The district court found that Claims 10 and 11 of the patent in suit were valid and infringed, and that plaintiff was entitled to injunctive relief and to damages. However, no determination has yet been made as to the amount of damages that plaintiff should recover. The district court found that the case was not an "exceptional" one and denied plaintiff's claim for an attorney's fee. See 35 U.S.C. §285. Plaintiff does not complain of that ruling.

Plaintiff's device was put on the market in 1963. Prior to that time persons who had occasion mechanically to move haystacks from one place to another did so by lashing the stacks to tiltable truck or trailer beds by means of cables and winches. A stack would then be transported to its destination by truck or by tractor and would be unloaded by retilting the bed or trailer and releasing the stack therefrom[1].

Plaintiff's device also makes use of tiltable beds or trailers which are part of or connected with trucks or trailers. However, plaintiff's device differs substantially from the old cable type movers. In Farmhand, Inc. v. Craven. 455 F.2d 609, 173 USPQ 1 (8th Cir. 1972), the court described plaintiff's device as follows:

> Plaintiff's device employs six roller chain belts running lengthwise in beams on an elongated truck or trailer bed. As the truck is backed into a haystack the load carrying surface is slightly inclined and the roller chains serve as a conveyor pulling the haystack onto the load surface....

The operation of plaintiff's device was described by Judge Nichol in this case as follows:

> ... To load a haystack with the device, the mover is backed up to a [599] haystack, the bed is tilted, and the mover is started back under the stack. At this point the rearward motion of the truck or tractor and the forward motion of the chains on the bed act in concert to lift the stack onto the bed as the bed simultaneously moves further under the stack. Unloading the mover requires a mere reversal of this process. . . .

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[1] See Farmhand, Inc. v. Craven, 455 F.2d 609, 173 USPQ 1 (8th Cir. 1972). That suit was brought against Russell O. Craven of South Dakota, a leading producer of cable-type movers. Plaintiff claimed that Craven had infringed Claim 10(h) of the Schiltz patent. The defendant conceded the validity of the patent but denied infringement. The defendant prevailed in the district court. Farmhand, Inc. v. Craven, 324 F.Supp. 207, 169 USPQ 811 (D. So. Dak. 1971). The judgment of this district court was reversed by this court which was of the view that infringement had been shown.

192 USPQ at 754.

One significant feature of plaintiff's mover is that the forward movement of the chain conveyor is at approximately the same speed as that of the backward motion of the bed as it is being pushed under the stack to be moved. See discussion in Farmhand, Inc. v. Craven, supra.[2]

There is no question that plaintiff's chain-type mover is superior to the old cable-type movers in a number of ways. The cable-type movers were slow and relatively inefficient; some of the necessary operations had to be performed manually and required the operator to dismount from his truck or tractor which could be particularly burdensome in bad weather; and the cable-type movers presented some safety hazards. After pointing out some of the disadvantages of the cable-type mover, the district court went on to say:

> The chain-type mover, it is conceded, has numerous advantages over the cable-type. In operating a chain-type mover the operator need not leave the cab of his truck or tractor during loading or unloading. The chain-type mover eliminates the necessity of manual operations . . . The operation of the chain-type mover is much quicker than that of the cable-type, and enables an operator to load and unload more stacks in a given period of time.

192 USPQ at 754.

While conceding that plaintiff's device is a useful one and is an improvement over the cable-type stack movers that have been described, the defendants contended in the district court and contend here that the patent in suit is invalid or that, if valid, it has not been infringed.

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[2] Claims 10 and 11 of the Schiltz patent are set out in full in the district court's opinion and will not be copied here.

It is not our function to try this case de novo. We are required to accept the factual findings of the district court unless clearly erroneous, Fed. R. Civ. P. 52(a), and if the district court applied correct standards of law to the acceptable facts of the case, its judgment must be affirmed.

From our consideration of the record, we are satisfied that the factual findings of the district court are adequately supported by the evidence, and that the district court did not err in applying the law to the facts. Accordingly, we affirm the district court's judgment and do so principally on the basis of the opinion of Judge Nichol which we consider to be detailed, painstaking and well reasoned.

Looking first at the issue of infringement, plaintiff claimed that the defendants had infringed Claim 10(h) and Claim 11 of the patent, and it seems to have been conceded that if Claim 10(h) had been infringed Claim 11 had also been infringed.

[1] Citing the tests of infringement laid down in Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 607, 85 USPQ 328, 330 (1950), and in Farmhand, Inc. v. Craven, supra, 455 F.2d at 611, 173 USPQ 2-3, the district court found that the claims in question had been infringed by equivalent if not literally. In Farmhand, supra, 455 F.2d at 611, 173 USPQ 2-3, we said:

> . . . Applying the equivalency test in this circuit entails making the determination that, " 'the infringing device must be substantially identical with the one alleged to be infringed in (1) the result attained; (2) the means of attaining that result; and (3) the manner in which its different parts operate and cooperate to produce that result.' " Montgomery Ward & Co. v. Clair, 123 F.2d 878, 881, 51 USPQ 499, 502-503 (8 Cir. 1941). See

> Ralston Purina Co. v. General Foods Corp., 442 F.2d 389, 393, 170 USPQ 202, 205 (8 Cir. 1971); General Bronze Corp. v. Cupples Products Corp., 189 F.2d 154, 159, 89 USPQ 355, 358-359 (8 Cir. 1951).

We agree that the district court correctly made the threefold determination in question.

It is clear from the opinion of the district court that it viewed the issue of patent validity as much more serious than the issue of infringement. And the great bulk of the opinion is devoted to a discussion of the various aspects of the validity issue.

[2] At the outset the district judge recognized that the essentials of patentability are invention or discovery, usefulness and novelty. 35 U.S.C. §101. It was also [600] recognized that a patent is presumptively valid, and that the burden of proving invalidity of a patent by at least substantial evidence is upon the party who asserts it. 35 U.S.C. §282; Woodstream Corp. v. Herter's Inc., 446 F.2d 1143, 1149-50, 170 USPQ 380, 384-385 (8th Cir. 1971); L. & A. Products, Inc. v. Britt Tech Corp., 365 F.2d 83, 86, 150 USPQ 770, 772-773 (8th Cir. 1966).

[3] Section 282 of Title 35 not only specifies that a patent is presumptively valid, it also sets out the defenses that are generally available in suits for patent infringement. Those defenses are: (1) Non-infringement, lack of responsibility for infringement, or unenforceability; (2) invalidity of the patent or of any particular claim in suit on any ground specified in Part II of the Patent Act as a condition of patentability; (3) invalidity of the patent or claim for non-compliance with §112 or §251 and (4) any other fact or act made a defense under the Act.

Basically, the position of the defendants is that the Schiltz patent does not meet the conditions of patentability set out in 35 U.S.C. §102(a) and (g) since the invention was anticipated by the prior art; that the condition set out in §103 was not met because the invention was "obvious" in the light of the prior art; and that the specification of the patent application did not set out the best mode for the carrying out of the invention as required by §112. It is further contended that the patent is invalid or unenforceable because of acts or omissions of the applicant in the prosecution of the application before the Patent Office. And still another contention is that the patentee was not the true inventor of the patented device.

All of these contentions, and perhaps others, were considered in detail by Judge Nichol and were rejected by him. We can add nothing of substance to what he has said. We agree with counsel for plaintiff that the questions before the trial court were essentially factual, that the findings of the trial judge have adequate evidentiary support, and that he divined correctly the governing legal principles.

The judgment of the district court is affirmed, and the case is remanded for a determination of the amount of damages to which plaintiff is entitled.

APPENDIX H

UNITED STATES COURT OF APPEALS
FOR THE EIGHTH CIRCUIT

Nos. 76-1918 and 76-2009

Clark Equipment Company and Clark Equipment, A.G.,
Appellants-Appellees,
vs.
Louis J. Keller and Cyril N. Keller,
Appellees-Appellants.

Appeals from the United States District Court
for the District of North Dakota

Submitted: August 31, 1977

Filed: February 17, 1978

Before GIBSON, Chief Judge, HEANEY and WEBSTER, Circuit Judges.

GIBSON, Chief Judge.

The two consolidated cases underlying the present appeal and cross-appeal arise out of a patent license contract whereunder Louis and Cyril Keller, residents of North Dakota, granted exclusive licenses on three inter-related patents to Clark Equipment Company, a corporation incorporated under the laws of Delaware and with its principal place of business in Michigan. In a similar license agreement, the Kellers granted to Clark Equipment A.G. (CEAG), a Swiss corporation which [S. 2] is a wholly owned subsidiary of Clark, an exclusive license under certain foreign patents corresponding to the licensed patents in the agreement with Clark. The patents involved relate to self-propelled, three and four-wheel skid steer loader vehicles manufactured by Clark in Gwinner, North Dakota. Patent 3,151,503 (503 patent) is a mechanical patent entitled "transmission system"; Patent 3,231,117 (117 patent) is a mechanical patent entitled "tractor vehicle and drive therefor"; Patent 195,254 (254 patent) is a design patent entitled "self-propelled loader."

Civil Action 4875

In October 1972, Clark filed a civil action against the Kellers pursuant to 28 U.S.C. §§2201 and 2202, seeking a declaration of the rights and obligations of the parties under their license agreement and alleging that because the three patents forming the subject matter of the license were invalid, the license contract was unenforceable. This declaratory judgment action, which was filed in the Western District of Michigan, was transferred to the District of North Dakota in August 1973. In September 1973, the Kellers filed an answer and counterclaim. The counterclaim was for royalties allegedly due from Clark under its license agreement with the Kellers and under certain nonexclusive sublicense contracts between Clark and others. In their counterclaim, the Kellers also alleged that Clark

or its predecessor in interest, the Melroe Company, had been negligent in failing to comply with the requirements of 35 U.S.C. §102(b) by neglecting to file a patent application on the 117 patent within the one-year period after the invention had been in public use or on sale.

In response to this negligence claim, Clark filed a third-party complaint against the law firm of Williamson, Bains and [S. 3] Moore as third-party defendant. Clark alleged that if there had been negligence in the filing of the application for the 117 patent, it had been that of the third-party defendant, who had represented Louis Keller and Clifford Melroe, the joint inventors of the mechanism underlying the 117 patent, and who had had a professional obligation to investigate the facts and see that the application was timely filed. The cases presently before this court do not include issues of negligence or possible liability for late filing of the 117 patent application, for on April 29, 1974, the District Court[1] ordered that Clark's third-party complaint and that portion of the Keller's counterclaim pertaining to these issues be tried separately from and after the present declaratory judgment action was tried.

Civil Action 4839

On July 25, 1973, the Kellers filed a separate action against Clark in the District of North Dakota. This action, which embodied the allegations in the answer and counterclaim for royalties due filed in Civil Action 4875, named CEAG as an additional defendant. The complaint alleged that, pursuant to a license agreement with the Kellers, CEAG was an exclusive licensee under certain foreign pa-

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[1] The Honorable Paul Benson, Chief Judge, United States District Court for the District of North Dakota.

tents corresponding to the licensed patents in the agreement with Clark, and that CEAG had failed to account for and pay royalties due thereunder. Jurisdiction was based upon diversity of citizenship. This action was consolidated with Civil Action 4875 on December 21, 1973.

Consolidated Actions

CEAG responded to the complaint in Civil Action 4837 [S. 4] with motions to dismiss in which it alleged lack of in personam jurisdiction, absence of proper service of process and failure of proper jurisdictional amount. The District Court denied these motions, *Keller v. Clark Equipment Co.*, 367 F. Supp. 1350 (D.N.D. 1973); CEAG reasserted its jurisdictional defenses in its answer.

On July 18, 1974, the District Court ordered a separate trial on the issue of the validity of the three patents. The trial on this severed issue ran for some 33 days in early 1975. The 30-volume trial transcript includes the testimony of 46 witnesses; 546 exhibits were also introduced into evidence. Following the trial, the district judge filed a lengthy, unpublished memorandum opinion in which he ruled that the 503 and 254 patents were valid, and that the 117 patent was invalid. Clark appeals the judgment of the District Court on all three patents; the Kellers cross-appeal on the 117 patent. CEAG appeals from the District Court's rulings on its jurisdictional allegations and defenses.

Jurisdictional Issues

Before addressing the merits of the patent issues raised on this appeal and cross-appeal, we will consider CEAG's

jurisdictional contentions. The District Court initially rejected CEAG's jurisdictional defenses in a memorandum opinion directed solely to this issue and entered prior to trial. *Keller v. Clark Equipment Co.*, 367 F. Supp. 1350 (D.N.D. 1973). CEAG has continued to assert a lack of in personam jurisdiction. In its lengthy memorandum opinion on the patent validity issues of this case, the District Court did not re-analyze CEAG's jurisdictional [S. 5] assertions. It simply took note of their continuing nature and cited its previous opinion denying CEAG's jurisdictionally based motion to dismiss.

In its initial consideration of CEAG's motion to dismiss, the District Court made the following findings of fact and inferences therefrom relative to jurisdiction over CEAG. CEAG, a corporation organized under the laws of Switzerland, is a wholly owned subsidiary of Clark, a Delaware corporation doing business in North Dakota. The present case concerns separate manufacturing licenses between Clark and the Kellers, who are residents of North Dakota, and CEAG and the Kellers. Each agreement was executed on May 19, 1971. The Clark-Keller agreement was subscribed by J. Becket (sic), as vice-president of Clark Equipment Company. The CEAG-Keller agreement was also signed by J. Becket (sic), this time in the capacity of vice-president of CEAG. Both agreements give Clark's Buchanan, Michigan, address for purposes of notice to the licensee and provide for continuing royalty payments to be made to the Kellers, residents of North Dakota. In the instant case, service on CEAG was made pursuant to Fed. R. Civ. P. 4(d)(7) by serving the summons and complaint on an officer of Clark at its Melroe Division in Gwinner, North Dakota. CEAG maintains a liaison engineering employee at the Melroe Division of Clark in North Dakota.

It can be reasonably inferred that CEAG became aware of the patents through its close association with the Melroe Division of Clark. Moreover, the factual situation here supports the inference that CEAG, or someone from Clark acting on behalf of CEAG, contacted the Kellers in North Dakota about the foreign patents, in contemplation of securing a European arrangement analogous to Clark's American arrangement exploiting the domestic patents in question. Irrefragably, [S. 6] CEAG sought out the Kellers in North Dakota, and the Clark-Keller and CEAG-Keller licensing agreements were handled by Clark's counsel for both Clark and CEAG. In this transaction, it clearly appears that Clark was acting for and on behalf of its wholly owned subsidiary, CEAG, and that the same individual signed both agreements on behalf of Clark and CEAG.

We have reviewed the record as a whole, giving particular attention to the documents from which the bulk of the District Court's jurisdictional findings and inferences are derived, and we can find no basis for rejecting these findings as clearly erroneous.[2] Moreover, we believe that they provide adequate support for the District Court's conclusions that CEAG had "minimum contacts" with North Dakota, which rendered in personam jurisdiction proper, and that even though CEAG itself was not doing business in North Dakota, CEAG and Clark were inextricably involved with the Kellers in the negotiations and execution of the patenting licensing agreements.

CEAG attacks the District Court's jurisdictional conclusion on several bases. We have considered its contentions in light of the District Court's careful analysis of this issue and find them to be without merit. Presence by the [S. 7] defendant in the forum state is not a jurisdictional prerequisite. *McGee v. International Life Insurance Co.*, 355 U.S. 220 222-23 (1957); *Electro-Craft Corp. v. Maxwell Electronics Corp.*, 417 F. 2d 365, 369 (8th Cir. 1969). It is only necessary that the defendant have sufficient minimum contacts with the forum state so that requiring it to defend itself there will not offend traditional notions of fair play and substantial justice. *International Shoe Co. v. Washington*, 326 U.S. 310, 316 (1945); *Aaron Ferer & Sons Co. v. Atlas Scrap Iron & Metal Co.*, 558 F. 2d 450, 454 (8th Cir. 1977). The District Court found that service had been made in compliance with the law of North Dakota[3] and that there were minimum contacts between CEAG and North Dakota in CEAG's licensing agreement with the Kellers, who are residents of North Dakota, and in its extremely close relationship to its parent corporation, Clark, which did business in North Dakota. The District Court did not consider the mere existence of a parent-subsidiary relationship adequate to establish minimum contacts with North Dakota. This relationship was merely one of several factors which added up to the requisite minimum contacts for in personam jurisdiction. We find neither factual nor legal error in the District Court's disposition of CEAG's jurisdictional defenses and agree that there is in personam jurisdiction over CEAG.

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[2] CEAG takes particular exception to the District Court's finding that CEAG had a liaison officer at the Melroe Division of Clark in Gwinner, North Dakota. We do not believe that this finding has been shown to be clearly erroneous. Moreover, we note that even if it be assumed that there was no liaison officer in North Dakota, there remains adequate factual support in the record for the District Court's jurisdictional conclusion.

[3] Pursuant to Rule 4(d) (2) (D) of the North Dakota Rules of Civil Procedure, service of process may be made within the state on a foreign corporation by delivering a copy of the summons "to one who acted as an agent for the defendant with respect to the matter upon which the claim is based and who was an agent of the defendant at the time of service."

Patent Issues

The complexity of this case compels individual analysis [S. 8] of each patent. Certain facts are common to all three patents, however, and we believe that their recitation here will provide an appropriate general introduction to the purposes and nuances of the individual patents.

The Kellers originally granted an exclusive license on the three patents at issue here to Melroe Manufacturing Company (Melroe) in 1964. In 1969, Clark acquired Melroe and succeeded to its rights under the license agreement with the Kellers. In 1971, Clark and the Kellers entered into a new licensing agreement which superseded the 1964 Melroe-Keller agreement and which contained a clause based upon *Lear v. Adkins,* 395 U.S. 653 (1969), specifically permitting Clark to challenge the validity and scope of the licensed patents.

The three patents in dispute in this litigation have been involved in two previous lawsuits. In the first action, which was filed and concluded before Clark acquired Melroe, the Kellers and Melroe sued Universal Manufacturing Company (Universal) in the Eastern District of Virginia for infringement of the 503, 117 and 254 patents. This suit was settled out of court. Pursuant to a stipulation containing an acknowledgment of the validity of the three patents, a consent decree and judgment were entered. By this settlement, Universal took a sub-license from Melroe on the three patents and agreed to pay royalties to Melroe. J. I. Case Company subsequently purchased Universal and acquired its rights under the Melroe-Universal license agreement.

In 1968, these patents engendered a second round of litigation, when Owantonna Manufacturing Company (Owantonna) sued Melroe and Cyril Keller in the District of Minnesota [S. 9] in an effort to have the 503,117 and 254 patents declared invalid.[4] Clark was substituted as party defendant after its acquisition of Melroe in 1969. This suit also ended in a settlement which incorporated an agreement whereby Owantonna was granted a sub-license by Clark on the three patents.

503 patent

Louis Keller and his brother Cyril operated a general repair and blacksmith shop in Rothsay, Minnesota, during the 1950's. In 1954, the Kellers became acquainted with Eddie Velo, a local grain and turkey farmer. In the early summer of 1956, Velo discussed with the Kellers the problems he had experienced in having manure accretions removed from his turkey barns. The barns had to be cleaned by hand, because their structure precluded the use of any mechanical loaders or tractors then available to Velo. Velo wanted to mechanize the cleaning process, and he envisioned a light, highly maneuverable loader vehicle as a desirable means of doing so. He described to the Kellers the type of machine which he felt would be necessary, citing as an example an Owantonna windrower he had once owned, which, he believed, had had a separate reverse and forward belt drive on each side and a caster wheel arrangement in the rear.

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[4] *See Owantonna Mfg. Co., Inc. v. Melroe Co.,* 301 F. Supp. 1296 (D. Minn. 1969), which pertains to the preliminary stages of this litigation.

After contemplating the Velo barn cleaning problem during the summer of 1956, the Kellers presented a freehand sketch of a loader to Velo. Pursuant to an understanding [S. 10] that Velo would pay for materials and compensate them for out-of-pocket costs and some of their labor, the Kellers began building a self-propelled loader in late October 1959. Because of their elementary design methods, the Kellers invented as they built. The Velo loader, which took approximately three months to complete and was delivered to Velo in February 1957, incorporated a rear-mounted engine, a belt drive to two forward driving wheels, and a single free-castering rear wheel. In March 1957, Velo paid the Kellers $1,349.00 as compensation for parts, material and some of the labor that went into building the loader.

The relationship between the Kellers and Velo was one in which the Kellers were kept closely advised of the loader's performance and were allowed unlimited access to the machine. Between February 1957 and the summer of 1958, the Kellers modified and improved the Velo loader, which manifested certain operational problems. The most serious problem concerned the loader's belt drive. The shifting of the loader's idler lever created friction and heat which caused the drive belts on each side of the loader to stretch. The stretching resulted in a loss of driving power in both forward and reverse. When the belt on one side alone stretched, the loader would drive only in circles. These problems prompted the Kellers to develop a clutch system that would eliminate the belt drive. During the spring of 1958, they constructed a test plate resembling

the side plate of the Velo loader. Upon this plate, they began to develop the clutch assembly which ultimately became the transmission system covered by the 503 patent. Around the end of July 1958, the cam-actuated clutch drive mechanism recited in each of the four claims of the 503 patent was installed in the Velo loader. The cam-actuated clutch drive provided [S. 11] more positive, responsive and reliable steering, starting and stopping control.

Prior to December 1, 1957, the critical date under 35 U.S,C. §102(b)[5] with respect to the 503 patent, the Kellers built no other loaders. In January or February 1958, they built several loaders equipped with the belt drive used in the original Velo loader rather than the cam-actuated clutch drive assembly covered by the 503 patent. Three of these loaders were delivered to Jenoff, Inc. of Fergus Falls, Minnesota, in the spring of 1958, but the record contains no evidence that the Kellers were in contact with Jenoff about their loader prior to December 1, 1957.

The application for the 503 patent was filed on December 11, 1958. The 503 patent, entitled "transmission system", contains four independent claims, each of which is specifically directed to a particular cam-actuated clutch drive mechanism having independently rotatable propulsion wheels which may be independently actuated by the drive mechanism for driving the vehicle backward or forward and for steering it. The 503 patent, which is a mechanical patent of 17 years' duration, was granted to the Kellers by the Patent Office on October 6, 1964. The District Court sustained the validity of the 503 patent.

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[5] To be patentable under § 102(b), the invention must not have been "in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States." The date one year prior to the date of application is often referred to as the critical or statutory bar date with respect to the invention sought to be patented.

[S. 12] In arguing on appeal that the trial court erred in holding the 503 patent valid, Clark impugns the correctness of essentially every step in the exhaustive factual and legal analysis made by the District Court. We will address Clark's contentions seriatim, after briefly introducing the basic tenets of patent law that must be applied to determine the validity of all three of the patents at issue here.

In order to be patentable, an invention must be useful, novel and nonobvious. The utility of the inventions patented here is not in question; the parties contest only the issues of novelty, or compliance with the patent requirements of §102(b), and nonobviousness. The standards for determining whether an invention possesses novelty are set forth in 35 U.S.C. §102. For the purposes of this first inquiry, we are concerned only with that aspect of 35 U.S.C. §102(b) which precludes patentability where an invention has been in public use or on sale in this country more than one year prior to the date of the application for patent in the United States.

Insofar as the requirement of nonobviousness is concerned, 35 U.S.C. §103 sets forth the standard for determining whether the subject matter of an invention is nonobvious.

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall

> not be [S. 13] negatived by the manner in which the invention was made.

35 U.S.C. §103. The Supreme Court has fleshed out the skeletal framework of §103 by providing guidelines for making an analysis of nonobviousness.

> Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.

Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966). Clearly, the test for nonobviousness requires basic factual as well as legal inquiries, *Graham v. John Deere Co., supra* at 17, and is one that must be resolved upon a case-by-case analysis. *Woodstream Corp. v. Herter's, Inc.*, 446 F. 2d 1143, 1150 (8th Cir. 1971).

(1) *scope of patent claims*

The 503 patent is entitled "transmission system". Clark contends that the District Court misconstrued the scope of the claims of the 503 patent by limiting them to a transmission system only and ignoring their integral relationship to a vehicle. A mere reading of the District Court's

[S. 14] construction of the scope of the 503 patent claims belies this contention.

> The 503 patent contains four independent claims. Each claim is specifically directed to a particular cam actuated clutch drive mechanism for a self propelled vehicle having independently rotatable propulsion wheels which may be independently actuated by the aforesaid drive mechanism for driving the vehicle forward and backward, and for steering it.

Clark Equipment Co. v. Keller, Nos. 4875 and 4839, slip op. at 11 (D.N.D. Sept. 23, 1976). The District Court, in delineating the scope of the claims of the 503 patent, explicitly recognized that the basic purpose of the cam-actuated clutch transmission system was the steering and driving of a vehicle. Thus, the claims of the 503 patent were in fact construed just as appellant Clark argues they should have been, and Clark's contention requires no further consideration.

(2) *exclusion of Velo loader from prior art*

In order to make a determination of obviousness under 35 U.S.C. §103, there must be a consideration of the differences between the invention and the prior art. Clark contends that the District Court erroneously excluded the Velo loader from the prior art and, therefore, made an incorrect obviousness analysis on the 503 patent. The basis of Clark's contention is the premise that the Velo loader was prior art under §103 because it was in public use or on sale prior to December 1, 1957, the statutory bar date under §102 for the 503 patent.[6] The trial court held that [S. 15] the Velo loader was neither on sale nor in public use prior to December 1, 1957, and that its use prior to that date was experimental.[7] Upon a thorough review of the record, we are convinced that the trial court applied appropriate legal principles to reach these conclusions, and that they are based upon correct findings of fact.

Moreover, even if the trial court erred in determining that the Velo loader was not prior art, this error leaves its obviousness analysis unvitiated, for despite its finding that the Velo loader was experimental, the trial court went on to assume *arguendo* that the Velo loader was prior art and to analyze the obviousness of the 503 patent from that standpoint. The belt-driven Velo loader, which was not disclosed as prior art to the Patent Office, did not contain the cam-actuated clutch mechanism on which all four of the claims of the 503 patent were allowed. The trial court found:

> Even if the original Velo loader as it existed prior to the critical date of [S. 16] December 1, 1957, is considered prior art to the 503 patent as having been in public use or on sale for more than one year before the 503 application was filed, this loader is no better

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[6] On appeal, Clark has specifically waived the argument that this purported public use or on-sale activity rendered the 503 patent invalid under § 102(b); it argues only that these activities caused the Velo loader to be prior art under § 103. The anomaly of Clark's position is obvious: it relies on § 102(b) for a definition of prior art applicable to § 103, but chooses not to invoke the actual bar of § 102(b) itself. We can find no logical or legal explanation for this peculiar argument, and our disposition of this contention makes speculation on this point unnecessary.

[7] In light of these clearly stated conclusions, we consider somewhat less than candid Clark's intimations in its briefs that the trial court found the Velo loader to have been on sale or in public use prior to the statutory bar date.

> prior art than the Loyd patent cited and relied upon by the Examiner, with respect to the particular clutch drive arrangement for a vehicle in combination with the cam actuation mechanism on which all four claims of the 503 patent were allowed. There are more of the elements in Loyd in the combination set forth in the claims of the 503 patent ** * than there are in the Keller Velo loader * * *.

Clark Equipment Co. v. Keller, supra at 19. Clark does not challenge the correctness of this finding;[8] nor does our independent review of the record reveal any reason to believe that it is incorrect.

(3) *exclusion of White patent from prior art*

The White patent, which was not cited by the Patent Office, describes a windrower with a "steering structure for farm implements and the like." At trial and on appeal, Clark has intimated that this was the machine mentioned by Eddie Velo to the Kellers in the summer of 1956. On this basis, Clark contends that the White patent was prior art for the 503 patent and that the trial court erred in refusing to consider the White patent as prior art in its analysis of the obviousness of the 503 patent.

This contention is unconvincing for several reasons. [S. 17] First, we note that its basis, the testimony of Eddie Velo, is equivocal, for Velo could not testify with certainty that the windrower he mentioned to the Kellers was the machime described by the White patent. Even if we assume an identity between the White patent and the windrower with which Velo was acquainted, however, we can perceive no error in the trial court's exclusion of the White patent from the prior art or, indeed, a basis for any other disposition of this issue. It appears that Clark did not choose to argue to the trial court that the White patent was prior art for the 503 patent. No evidence whatsoever was submitted by Clark at trial to show how the White patent, alone or in combination with any other patents, might be relied upon as prior art.

The District Court held that the Velo loader did not incorporate the claimed features of the 503 patent and was no better prior art than the Loyd patent cited and relied on by the Patent Examiner. It concluded that the relevancy of the White patent, which was at best a possible forerunner of the Velo loader, was limited, because the White patent was more significant to the belt drive of the original Velo loader than to the cam-actuated clutch drive of the 503 patent. We can find no error in the trial court's disposition of this issue.

(4) *differences between prior art and claims of the 503 patent*

Graham v. John Deere Co., 333 U.S. 1 (1966), requires that in making an obviousness analysis under §103, the trial court determine the scope and content of the prior art, ascertain the differences between the prior art and the claims at issue and resolve the level of ordinary skill in [S. 18] the pertinent art. On appeal Clark alleges, in wholly conclusory fashion, that the trial court failed to ascertain the differences between the prior art and the claims of the 503 patent. This contention flies in the face of the trial court's careful examination of the claims of the 503 patent vis-a-vis the Schreck, Hellwarth and Loyd patents, which were the primary prior art patents relied on by the Patent Office, and the Velo loader, which was assumed to be applicable prior art for the purposes of an obviousness analysis. Based on this examination,[9] the trial court concluded:

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[8] Indeed, Clark does not even acknowledge the existence of this finding, which directly contradicts its contention that the trial court erred by failing to consider the Velo loader as prior art for the 503 patent.

> Assuming arguendo that the Velo loader is prior art, the deficiencies in that loader were easily recognized by both the Kellers and Velo. The most significant problem involved the heating, and subsequent expanding and slippage of the belts which resulted in the loss of driving and steering control. Installation of clutches was a solution, but there existed a gap in the teaching of the prior art—Hellwarth and Schreck—as to how to install clutches in such a way to be able to actuate them to maintain steering and forward and reverse control in a smooth [S. 19] and effective manner from the operator's compartment. The Keller's conceived a new clutch drive mechanism which proved to be highly effective and commercially successful. The solution by the Kellers was not readily obvious to one having ordinary skill in the pertinent art.

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[9] We consider that a repetition of the detailed findings underlying the differences ascertained by the district judge would serve no useful purpose here. In order, however, to give some indication of the careful and painstaking character of his analysis of the prior art, we will set forth a mere part of his findings on the Schreck patent. The District Court found, *inter alia*, that the Schreck patent disclosed "a self-propelled dolly which is controlled by an operator walking in front of the dolly. As disclosed by the drawings of the Schreck patent, steering and driving control is achieved through a draft tongue 6 having a rotatable gripping handle 61. A linkage bar 63 connected to handle 61 servers to move a link bar for actuation of a pair of clutch units * * * through crank arms * * * connected to the opposite ends of link 51." *Clark Equipment Co. v. Keller, supra,* slip op. at 17. We note that the findings which we have just cited represent a mere fraction of the District Court's exhaustive analysis of the prior art.

Clark Equipment Co. v. Keller, supra, slip op. at 28. We believe that the trial court complied with the requirements of *Graham v. John Deere Co., supra,* by ascertaining the differences between the prior art and the claims of the 503 patent.

(5) *synergistic effect of claimed transmission system*

Clark argues that because the 503 patent is simply a combination of old elements, the trial court had an obligation to determine whether this combination acted to produce a synergistic or unexpected effect. Clark's allegation of error is based upon two premises, *viz* that a synergism analysis was required and that the District Court failed to meet this requirement. Because we find that the District Court did in fact give adequate consideration to the effect of the combination of elements in the 503 patent, we need not address the question of whether or not a synergism analysis was mandatory on the facts here. In passing, we do note, however, major differences between the basicness and simplicity of the old elements combined in the cases cited as controlling by Clark and the more complex elements of the 503 patent.[10] Moreover, it appears that hindsight [S. 20] alone persuaded Clark of the necessity for a synergism analysis, for Clark first made mention of this issue only in a post-trial reply brief, after failing to raise any synergism claim at or before trial.

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[10] *Sakraida v. Ag Pro, Inc.,* 425 U.S. 273 (1976), involved an invention for the cleaning of dairy barns by means of flushing water down an inclined surface. In *Anderson's-Black Rock, Inc. v. Pavement Salvage Co., Inc.,* 396 U.S. 57 (1969), the invention consisted of hanging a radiant burner on the side of a paving machine. The invention involved in *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.,* 340 U.S. 147 (1950), was nothing more than a U-shaped frame capable of sliding items along a counter top.

The District Court's memorandum opinion does not contain an explicit analysis of synergism. In light of Clark's failure to raise a synergism argument prior to or during trial, we find this lack of explicit reference by the District Court unsurprising. In the patent law context, "synergism" has no talismanic power; synergism is merely one indication of nonobviousness. What is required, when a synergism analysis is appropriate, is simply a determination that the combination of elements in a patent produces "an effect greater than the sum of the several effects taken separately." *Anderson's-Black Rock, Inc., v. Pavement Salvage Co.*, 396 U.S. 57, 61 (1969). A careful reading of the District Court's opinion reveals that determinations of the novelty and unexpectedness of the combinative effect of the elements of the 503 patent underlie the District Court's entire analysis of obviousness under §103. Form would triumph over substance were we to hold this analysis inadequate for lack of specific reference to synergism, particularly in view of Clark's failure to place the issue of synergistic effect into issue prior to or during trial.

(6) *obviousness of the 503 patent*

Nonobviousness is one condition of patent validity; the subject matter sought to be patented must not be obvious to a person having ordinary skill in the pertinent art. 35 U.S.C. §103. While the question of obviousness vel non is, like the ultimate question of patent validity, a matter of law rather than fact, *Flour City Architectural Metals v. Alpana* [S. 21] *Aluminum Products, Inc.*, 454 F. 2d 98, 106 (8th Cir. 1972), the obviousness condition imposed by §103 is one which "lends itself to several basic factual inquiries." *Graham v. John Deere Co., supra* at 17. The basic factual inquiries required under §103 include a determination of the scope and content of the prior art, an ascertainment of the differences between the prior art and the claims at issue and a resolution of the level of ordinary skill in the pertinent art. *Graham v. John Deere Co., supra* at 17. The District Court made the factual findings required by *Graham v. John Deere Co.*, and nothing Clark has urged on appeal convinces us that these findings are incorrect or lack support in the record.

The court held that the 503 patent met the nonobviousness requirement of §103. Clark raises two primary challenges to this conclusion of nonobviousness: first, that the 503 patent constitutes only an obvious improvement over the Velo loader combined with the Schreck and Hellwarth patents and, secondly, that the 503 patent constitutes only an obvious improvement over the White patent combined with the Schreck and Hellwarth patents. We conclude that the District Court was correct in its determination of the relevant prior art and in its rejection of Clark's contentions that the 503 patent was obvious in light of the original Velt loader taken in combination with the Loyd, Schreck, Hellwarth and White patents.

Assuming *arguendo* that the Velo loader was prior art, the District Court found that it did not contain the claims unique to the 503 patent and that it was no better prior art than the Loyd patent cited and relied upon by the Patent Examiner. The court also found that the White patent was more relevant as prior art to the belt-driven Velo loader [S. 22] than to the 503 patent and that the most pertinent prior art consisted of the Schreck and Hellworth patents, which were cited, considered and rejected by the Patent Office. On this basis, the court concluded that

Clark had failed to prove by substantial evidence how the prior art could be combined to meet the claimed structure of the 503 patent without hindsight.[11] We have previously rejected Clark's piecemeal attacks made on the basis of the trial court's obviousness determination. A careful review of the record convinces us that the District Court's conclusion that the 503 patent constitutes more than a merely obvious improvement over the relevant prior art is entirely correct.

(7) *candor to the Patent Office*

Clark contends that the Kellers' failure to disclose the Velo loader as prior art to the Patent Office constituted a lack of candor that necessitates invalidation of the 503 patent. A patent applicant has an uncompromising duty toward the Patent Office to disclose all pertinent facts. However, a party seeking to establish fraud on the Patent Office because of a failure of full disclosure bears a heavy burden of persuasion: fraud on the Patent Office must be proved by clear, convincing and substantial evidence. *Norton v. Curtiss,* 433 F. 2d 779, 797 (C.C.P.A. 1970).

The trial court rejected Clark's contention that the [S. 23] Kellers' nondisclosure of the Velo loader to the Patent Office constituted a breach of the duty of full disclosure. The court held that because there is no duty on a patent applicant to disclose prior use where there is a bona fide basis for believing the use was experimental, the Kellers had no duty to disclose the experimental Velo loader.

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[11] A patent which has survived the scrutiny of the Patent Office is presumed to be valid, and one attacking validity on the basis of obviousness carries the burden of proof on this issue. *Woodstream Corp. v. Herter's, Inc.*, 446 F.2d 1143, 1149 (8th Cir. 1971).

Moreover, even assuming the Velo loader to be prior art, the court had previously found that it was nonanticipatory. Thus, the Velo loader was of such a nature that even if it had been disclosed to the Patent Office, it would not have had an impact on the issuance of the patent. *Tate Engineering, Inc. v. United States,* 477 F. 2d 1336, 1345 (Ct. Cl. 1973). Accordingly, nondisclosure of the Velo loader did not constitute a breach of the duty of disclosure.

We have previously expressed our agreement with the trial court's findings that the Velo loader was experimental or, if considered prior art, was nonanticipatory of the 503 patent. These findings support the conclusion that the Kellers breached no duty of disclosure to the Patent Office. At trial, Clark failed to prove a breach of the duty of uncompromising disclosure to the Patent Office; on appeal, Clark has failed to demonstrate that the trial court erred in rejecting its unproved allegation of fraud.

117 patent

In May 1959, the Kellers and Melroe Manufacturing Company (Melroe) entered into an agreement whereby Melroe acquired an exclusive license under the 503 patent. In 1959 and 1960, Melroe manufactured and sold several loader models, the M-60, M-200 and M-400, all of which were equipped with the transmission drive system covered by the 503 patent.[12] These loaders [S. 24] did not prove to be especially profitable, and Melroe contemplated leaving the loader market. Louis Keller insisted that Melroe try to experiment with new loaders and, due at least partially to his insistence, Melroe decided to experiment rather than abandon the loader field. During the course of this experimentation in 1961, four prototypical preproduction loaders, designated M-440's, were built and the machine incorporating the elements of the 117 patent was developed. Because the 18 claims of the 117 patent, entitled "tractor vehicle and drive therefor", were reduced to practice during the development of the four M-440 prototypes, the individual histories of these machines bear consideration. Application for the 117 patent was filed on October 23, 1962, thus making October 23, 1961, the critical statutory bar date. A mechanical patent of 17 years' duration was granted to Louis Keller and Clifford Melroe on January 15, 1966.

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[12] The patent claims of the 503 patent were originally applied to a three-wheel vehicle with two independently rotatable forward driving wheels and a third free-castering rear wheel. By December 1960, the M-200 loader had been modified by the addition of a rear axle and two rear drive wheels, thus producing a four-wheel power driven skid steer loader.

The first preproduction machine, known as the Clyde Olson loader, was finished no later than the end of February 1961. Although it differed somewhat from earlier models, it was equipped with slide cam type clutch actuators identical to those employed in its predecessors. The Clyde Olson loader, which contained few, if any, elements of the 18 claims of the 117 patent, was never put into production.

Between the date of completion of the Clyde Olson [S. 25] machine and May 1961, a second prototype was constructed. This loader, known as the Gravel Pit loader, was tested extensively by Louis Keller and employees of Melroe in a gravel pit near Gwinner, North Dakota, as well as at the home of Cyril Keller in Rothsay, Minnesota. The Gravel Pit loader differed from the Clyde Olson machine in several major aspects, but not in clutch design. It contained

cam type clutch actuators and did not embody all of the elements of the 117 patent.

A third prototype was completed sometime after July 4, 1961, and probably before August 1, 1961. This prototype contained improvements on some of the weaknesses revealed during the gravel pit testing of the third prototype. This testing had made it clear to Louis Keller that there were serious limitations to the tapered clutch design. In particular, the slide cam actuators tended to stick, which would cause the machine to cant or jerk unexpectedly, in a manner dangerous to the operator. Furthermore, the clutches would oil can[13] and the side plates bow, causing the clutches to slip. Nevertheless, the third prototype retained the cam type clutch actuators characteristic of its predecessors and, thus, did not reduce to practice the essential elements of the 18 claims of the 117 patent.

Louis Keller and Clifford Melroe subsequently conceived of and developed a threaded rotary actuator clutch, designed to avoid the aforesaid problems experienced with the slide [S. 25] cam type clutch. This threaded rotary actuator clutch was placed into the fourth prototype, a white loader with flat clutch plates known as the Cy Keller demo. Because of the flat clutch plates, there was difficulty in obtaining good clutch power transmission. The clutches tended to slip and could not be solidly engaged. Bench tests revealed that these problems were caused by the oil canning of the flat clutch plates. A new dome-shaped clutch plate was subsequently designed to avoid the oil canning problem. To provide for lubrication of the clutch linings, the design was also changed to provide oil pickup slots on the input clutch, intended to pick up oil thrown about inside the gear case by the chains.

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[13] Oil canning occurs when pressure applied to a clutch plate causes flexion similar to that occasioned by the application of pressure to the center of the bottom of a round oil can.

After a period of testing, the decision was made to produce a new loader line, which was given the same M-440 designation that had been used for its prototypes. The M-440, which was to be white, a color considered appealing to the fertilizer industry, was equipped with a threaded rotary actuator clutch design. Production on the M-440, for which the trade name "Bobcat" was adopted, began in December 1961. The fourth prototype was built to check out the final production tooling for the M-440. It was the first machine to incorporate all of the elements of the threaded clutch actuator eventually put into the M-440. It also represented the first embodiment of all of the elements of the 18 claims of the 117 patent and, accordingly, the date of its construction is crucial. Unfortunately, the large amount of evidence submitted to date the construction of the fourth prototype is contradictory. After carefully analyzing all of the evidence on this point, the trial court found that the most credible evidence established that the date of construction had been near the end of the [S. 27] third quarter of 1961. The critical statutory bar date under 35 U.S.C. §102(b) is October 23, 1961.

Melroe engaged in commercial promotion of the M-440 before actual production of the new loader line began,[14] and in some instances negotiations for sales also preceded production. In retrospect, the rapidity with which the M-440 began to sell may be viewed as an early and accurate indicator of the remarkable commercial success which this loader line has enjoyed. On the other hand, however, the early fruition of the M-440 sales campaign has redounded to the detriment of the holders of the 117 patent. The M-440 loader was offered for sale to both Farmers Union Central Exchange and Midland Cooperatives prior to October 23, 1961, and orders for future delivery were taken from those two companies prior to October 23, 1961. On this basis, that a machine incorporating the elements of the 117 patent had been on sale prior to the statutory bar date of §102(b), the District Court held the 117 patent invalid. This invalidity under §102(b) [S. 28] was the sole ground for the holding that the 117 patent was invalid; all other alleged bases for invalidity were considered and rejected by the District Court.

The District Court's ruling that the 117 patent was invalid under §102(b) is challenged on appeal by the Kellers. Moreover, Clark, which acquired Melroe in 1969 and succeeded to its rights under the license agreement with the Kellers, attacks the District Court's rejection of the additional and alternative grounds of invalidity it has proposed. We will first address the contentions raised by the Kellers and then turn to the more numerous contentions of Clark.

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[14] There was conflicting testimony as to whether a white Melroe loader was exhibited at the Minnesota State Fair between August 26 and September 4, 1961. The trial judge deemed this evidence inconclusive and insufficient to support a finding that a white Melroe loader was on display at the Fair. He concluded that "Melroe intended to display a 440 loader at the Fair, but for some reason did not."

There was also evidence showing that a news release advertising the M-440 Bobcat was distributed to a large number of trade publications and newspapers within a few days of the critical bar date of October 23, 1961. The news release was dated October 20, and a newspaper article published October 26 contained an almost verbatim recitation of the contents of the news release. There was, however, no direct evidence of the date on which the release was mailed.

(1) *offer for sale of machine embodying all elements of the 117 patent prior to the statutory bar date*

The Kellers present a tripartite challenge to the District Court's holding that a machine incorporating the elements of the 117 patent was on sale prior to October 23, 1961, the statutory bar date for that patent under 35 U.S.C. §102(b). They argue that this conclusion is not supported by the evidence; that it is not supported by the trial court's findings; and that it is predicated upon a misconception and misapplication of *Dart Industries, Inc. v. E. I. Du Pont De Nemours & Co.*, 489 F. 2d 1359 (7th Cir. 1973), *cert. denied*, 417 U.S. 933 (1974).

The parties introduced a vast amount of evidence on the 117 patent. The complex and often contradictory nature of this evidence is reflected in the trial court's lengthy memorandum opinion, which contains 151 findings of fact relative to the 117 patent alone. In contending that the trial court's holding, that there were invalidating sales [S. 29] of a machine incorporating the elements of the 117 patent, is not supported by the evidence, the Kellers point out that Clark bore the burden of proof, *Woodstream Corp. v. Herter's, Inc.*, 446 F. 2d 1143, 1149 (8th Cir. 1971); they denigrate the adequacy of almost every piece of evidence relied upon by the District Court and point to evidence which, they contend, should have been relied upon instead.

We have reviewed the record in light of each of the Kellers' specific allegations of lack of evidentiary support. This review convinces us that the trial judge made an exhaustive analysis of the mountainous evidence submitted on the 117 patent and that his conclusion that a machine incorporating all the elements of the 117 patent was offered for sale prior to October 23, 1961, is adequately supported by the evidence. It would serve no useful purpose to recite and refute each separate allegation of evidentiary insufficiency urged by the Kellers; the record, which we have read with care, contains more than adequate evidence to support the District Court's conclusion that "the 440 loader was offered for sale to Farmers Union Central Exchange and Midland Cooperatives prior to the October 23, 1961, §102(b) statutory bar date, and that orders for future delivery were taken from those two companies prior to October 23, 1961." We deem it sufficient here simply to point out some of the more salient evidence supportive of this conclusion.

Melroe actively promoted the M-440 Bobcat not only prior to the commencement of production in December 1961, but at some time extremely near the statutory bar date. While this evidence alone is insufficient to establish that the M-440 was offered for sale prior to October 23, it is [S. 30] available to buttress the circumstantial evidence of sales activity found in the record. Insofar as the sales involving Farmers Union Central Exchange (Farmers Union) are concerned, a partial list of the evidence includes: Melroe's demonstration of a white loader to representatives of Farmers Union some time prior to October 4, 1961; a Melroe purchase order dated October 3, 1961, for three M-440 loaders with fertilizer buckets at $2,750 each; a Farmers Union purchase order dated October 4, 1961, for three M-440 loaders with fertilizer buckets at $2,750 each; a Melroe invoice with an acknowledgment date of October 4, 1961, for three M-440 loaders with fertilizer scoops at $2,750 each; and a bill of lading showing delivery of one 440 S.P. loader with fertilizer scoop to Farmers Union on January 4, 1962. The authenticity of these documents was established at trial. Moreover, the Kellers submitted no evidence rebutting or explaining these documents. Accordingly, the trial court chose to infer that the M-440 loader was offered for sale to Farmers Union prior to October 23, 1961. In our review of the record, we have examined the documentary and other evidence underlying this inference and are convinced that the trial court's inference and conclusion are fully supported by the record.

Insofar as the sales involving Midland Cooperatives are concerned, a partial list of the evidence contained in the record includes: a Melroe purchase order dated September 23, 1961, for nine M-440 loaders with fertilizer buckets for future delivery to different locations; and seven Melroe invoices, each of which bears an acknowledgment date of September 30, 1961, covering the sale of seven M-440 loaders with fertilizer scoops to Midland Cooperatives for delivery to different locations. The trial court considered this [S. 31] evidence in light of the testimony of former employees of Midland Cooperatives and Melroe on the procedures followed by Melroe in processing orders, and made the inference that the sales involved were processed prior to September 30, 1961. Our own review of these documents and the record as a whole convinces us that the trial court's inference was reasonable[15] and that its conclusion that

the M-440 loader was offered for sale to Midland Cooperatives prior to October 23, 1961, is supported by the evidence.

[S. 32] The Kellers also argue that "the trial court's conclusion that a machine having all the patented features of the 117 patent was offered for sale prior to the critical date is not supported by the trial court's findings." In support of this contention, the Kellers refer specifically to only two of the trial court's 151 findings of fact on the 117 patent, which they characterize as inconclusive. Notably, they do not argue that these or any other findings of fact are clearly erroneous. We can find no merit in this contention. The trial judge's findings of fact support his conclusion and have not been shown to be clearly erroneous.

A patent is invalid under 35 U.S.C. §102(b) if the subject matter of the invention has been on sale or in public use more than one year prior to the filing of the patent application. The District Court held that a machine embodying the elements of the 117 patent had been on sale prior to the statutory bar date. In discussing its conclusion that the §102(b) bar applied, the District Court stated:

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[15] The Kellers argue that Clark was not entitled to inferences that offers of sale were made prior to the critical date. In its memorandum opinion, the trial court clearly explained that its inferences of sales activity were based upon specific sale documents. In an action tried without a jury, inferences drawn from documents or undisputed facts shall not be set aside unless they are clearly erroneous. *United States v. U.S. Gypsum Co.*, 333 U.S. 364, 394 (1948); *Birdwell v. Hazelwood School Dist.*, 491 F.2d 490, 494 (8th Cir. 1974). Moreover, when conflicting inferences may be drawn from the evidence, a reviewing court is not at liberty to disturb a reasonable inference made by the trial court unless it is definitely and firmly convinced that a mistake has been made. *A. L. B. Theatre Corp. v. Loew's Inc.*, 355 F.2d 495 (7th Cir. 1966). Finally, on appeal the evidence, including the inferences reasonably drawn therefrom, must be viewed in the light most favorable to the prevailing party. *Imperial Cas. & Indem. Co. v. Carolina Cas. Ins. Co.*, 402 F.2d 41, 44 (8th Cir. 1968). We have reviewed the trial court's inferences of sales activity prior to October 23, 1961; we find them to be reasonable and not clearly erroneous.

In challenging the inferences drawn by the trial court, the Kellers also argue that because of certain past behavior, Clark was not entitled to beneficial inferences from the evidence. After a careful analysis of Clark's past behavior, in particular, its failure to preserve evidence or records in its possession possibly relating to this issue, the District Court, "with some hesitation," gave Clark the benefit of inferences of sales activity. The Kellers have cited no authority which suggests that the District Court erred in deciding to draw inferences favorable to Clark. The record supports the inferences drawn by the District Court and we can find no error in the decision to draw inferences favorable to Clark.

> It is not necessary that the "patented product" be on hand in commercial quantities for it to be "on sale" within the meaning of §102(b). In fact, it is only necessary the invention be "essentially" completed at the time of the invalidating sale. Exact identity between the product sold and the product described in the patent application is not required. *Dart Industries, Inc. v. E. I. Du Pont De Nemours and Co.*, 489 F. 2d 1359, 1364-65 (7th Cir. 1973), *cert. denied*, 417 U.S. 933 (1974).

Clark Equipment Co. v. Keller, supra, slip op. at 56. The Kellers contend that the District Court's conclusion is incorrect because it is based upon a misapplication of *Dart Industries, supra*. The crux of this contention appears to be that the District Court relied upon *Dart* [S. 33] *Industries* to avoid the identity requirement of §102(b). We are unable to agree.

It is undisputed that the M-440 included all of the features of all of the claims of the 117 patent. The final prototype preceding production of the M-440 was the fourth prototype, which contained all of the elements of the threaded rotary clutch actuator concept. The trial court found that the fourth prototype was constructed during the third quarter of 1961, that is, prior to October 23. M-440 loaders were offered for sale to both Farmers Union and Midland Cooperatives prior to October 23. This evidence fully supports the District Court's conclusion that a machine embodying all of the elements of the 117

patent was on sale prior to the statutory bar date. We can find no legal error in this conclusion. The identity requirement of §102(b) was met, and *Dart Industries,* which is merely interpretive of §102(b), was not misapplied.

(2) *standard of proof*

Under 35 U.S.C. §282, a patent which has survived the scrutiny of the Patent Office carries a presumption of validity, and a party objecting to the validity of a patent bears the burden of establishing invalidity. *Woodstream Corp. v. Herter's Inc.*, 446 F. 2d 1143, 1149 (8th Cir. 1971). The District Court required Clark to adduce substantial evidence of patent invalidity to rebut the presumption of validity. The Kellers contend that substantial evidence is an improper and overly lenient standard of proof. They argue that the District Court should have required Clark to establish patent invalidity by clear and convincin evidence and that Clark did not adduce clear [S. 34] and convincing evidence of invalidity and, therefore, failed to meet the appropriate standard of proof.

Although courts have differed over the precise quantum of proof necessary to overcome the presumption of patent validity, *Woodstream Corp. v. Herter's, Inc., supra* at 1149 n. 4, there is general agreement that the burden is a heavy one. In recent years, several circuits have defined the burden of establishing patent invalidity as one which must be satisfied by clear and convincing evidence.[16] This circuit, however, has defined the standard of proof in terms of substantial evidence. *Woodstream Corp. v. Herter's, Inc., supra* at 1149 n.4; *L & A Products, Inc. v. Britt Tech Corp.*, 365 F. 2d 83, 86 (8th Cir. 1966).

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[16] *See, e.g., Aluminum Co. of America v. Amerola Products Corp.*, 552 F.2d 1020, 1024 (3d Cir. 1977); *Chicago Rawhide Mfg. Co. v. Crane Packing Co.*, 523 F.2d 452, 458 (5th Cir. 1975), *cert. denied*, 423 U.S. 1091 (1976); *Minnesota Mining & Mfg. Co. v. Kent Indus., Inc.*, 409 F.2d 99, 100 (6th Cir. 1969).

In requiring Clark to present substantial evidence in order to establish patent invalidity, the District Court was simply requiring the quantum of proof used in this circuit in patent cases. We cannot say that the District Court erred by imposing the standard of proof current in this circuit rather than substituting a standard used elsewhere. Applying the substantial evidence standard, the District Court deemed Clark's evidence of sales activities prior to the statutory bar date to be sufficient to establish the invalidity of the 117 patent under 35 U.S.C. §102(b). As we have previously indicated, we find this conclusion [S. 35] to be amply supported both by the evidence and the trial court's findings. Moreover, it was based upon a correct interpretation of the controlling law, including the standard of proof.[17]

Clark's alternative contentions on the invalidity of the 117 patent

Clark convinced the District Court that the 117 patent was invalid under §102(b) because of sales activity prior to October 23, 1961, the statutory bar date. Clark also challenged the validity of the 117 patent on the ground that it was obvious and did not, therefore, conform to the requirement of nonobviousness imposed by 35 U.S.C.

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[17] Clear and convincing evidence and substantial evidence are not standards which lend themselves to precise definition or quantification and we will not attempt to identify and quantify any degree of variance which may distinguish them. We simply note that both are heavy burdens of proof and though there is a difference in the standards, we have no doubt that the proof which was considered adequate under the substantial evidence standard here would also suffice under the clear and convincing evidence test.

§103.[18] Under the guidelines of *Graham v. John Deere Co., supra*, the District Court made an exhaustive analysis of the obviousness issue and ultimately concluded that the 18 claims of the 117 patent were nonobvious within the meaning of 35 U.S.C. §103. Clark now challenges this determination and raises various miscellaneous claims of error. We will first address these miscellaneous contentions, which derive in large part from the trial court's §102(b) analysis [S. 36] discussed above.

(1) *demonstration at the Minnesota State Fair*

There was conflicting testimony on the question of whether a white Melroe loader was demonstrated at the Minnesota State Fair between August 26 and September 4, 1961. The trial judge considered this evidence to be inconclusive and insufficient to support a finding that a Melroe loader was on display at the Fair. He found that Melroe had intended to display a loader at the Fair, but that it had not done so. Clark characterizes this finding as clearly erroneous and, in support of this characterization, cites the evidence favorable to a finding that a loader was on display.

Upon a review of the evidence submitted on this point, we are in full agreement with the trial judge's assessment that a loader was displayed at the Fair. We consider his finding of non-display eminently correct. Moreover, even if we assume this finding to be erroneous, we are unable to discern how Clark could have been prejudiced thereby. The trial court ruled in favor of Clark by holding the 117 patent invalid under §102(b) on the basis of sales activity prior to the statutory bar date. A finding that a Melroe loader was on display at the Fair would simply have provided cumulative evidence of this invalidating activity.

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[18] Although the invalidity issue was decided in Clark's favor, the issue of nonobviousness remains live in regard to the Kellers' claim for negligence against Clark and its predecessor, Melroe, for failure to make a timely application for the 117 patent and in regard to Clark's third-party claim against the law firm of Williamson, Bains and Moore. These claims remain with the District Court for resolution.

(2) *exclusion of two Midland Cooperatives purchase orders*

One of the bases for the trial court's conclusion that the 117 patent was invalid under §102(b) was the finding that the M-440 loaders had been offered for sale to Midland [S. 37] Cooperatives prior to the statutory bar date. Two documents offered by Clark to prove sales activity with Midland Cooperatives were excluded from evidence for lack of adequate foundation showing them to be business records prepared in the normal course of business. Clark contends that this exclusion was erroneous and that it reveals that the trial court imposed abnormally stringent evidentiary requirements upon Clark.

We can find no error in this exclusion. Moreover, we are unable to discern that this ruling had any prejudicial effect whatsoever upon Clark, which prevailed upon the very issue to which these excluded documents were directed. Finally, the record is devoid of support for the contention that in this or any other evidentiary ruling, improper evidentiary requirements were imposed upon either party.

(3) *exclusion of interrogatories and answers from Universal lawsuit*

Clark attempted to introduce into evidence an exhibit containing discovery material from the lawsuit against Universal which had been settled by Clark's predecessor Melroe by way of a sublicense agreement with Universal. This exhibit consisted of interrogatories directed to representatives of Melroe and to the Kellers, and their answers thereto. In opposition to the introduction of this exhibit, the Kellers asserted that the Universal lawsuit had been controlled by Melroe's attorney; they testified that although they had signed the interrogatory answers under oath, they were never given or shown copies of the questions to which these answers pertained. The District Court excluded this exhibit from evidence, but permitted Clark to use the interrogatories and answers on cross-examination of the Kellers for impeachment [S. 38] purposes. Clark contends that this limitation was erroneous.

We need not decide whether this exclusion was erroneous, for we are convinced that it it was error, it was harmless. Clark engaged in extensive cross-examination of the Kellers, during which it was allowed to use the interrogatories and answers for impeachment. Moreover, Clark was successful in obtaining a ruling of invalidity on the 117 patent, to which this proffered exhibit apparently pertained. Under these circumstances, we do not believe that Clark has asserted, nor does our review of the record show, any prejudice flowing from the exclusion of this exhibit from the evidence.

(4) *obviousness of the 117 patent*

At trial, Clark challenged the 117 patent not only on the basis of invalidating activity under 35 U.S.C. §102(b), but also on the basis of obviousness as that term is defined by 35 U.S.C. §103. We have already expressed our agreement with the District Court's determination that the 117 patent was rendered invalid by sales activity prior to the statutory bar date imposed by 35 U.S.C. §102(b). Clark argues that the District Court erred in not finding the 117 patent invalid on the additional ground of obviousness under §103 and asks that we remedy this purported error. Clark attacks the District Court's ruling that the 117 patent was nonobvious on three grounds. It alleges that the District Court failed to determine the scope and content of the prior art; that it failed to ascertain the differences between the prior art and the claims of the 117 patent; and that it erred in failing to find the subject matter of the 117 patent to be an obvious improvement over the prior art.

[S. 39] A perusal of these alleged errors could easily create the impression that the District Court chose not to consider the obviousness of the 117 patent because of its conclusion that this patent was invalid on other grounds. Nothing, however, could be farther from the truth. While Clark conceded that the 117 patent was nonobvious on the basis of the prior art cited to the Patent Office, it asserted that there was "pertinent prior non-cited art" upon which the 117 patent was merely an obvious improvement. The detailed consideration given by the District Court to this allegedly pertinent non-cited prior art, which included preproduction loaders used as demonstrators, the M-400 loader and a number of patents, is reflected in 23 findings of fact and a lengthy legal analysis. Adhering to the guidelines of *Graham v. John Deere Co., supra,* the District Court determined the scope and content of the prior art asserted by Clark, ascertained the differences between this prior art and the claims of the 117 patent and determined

the level of ordinary skill in the small loader art. The District Court found that Clark had failed to show how the non-cited art was more pertinent than the prior art cited by the Patent Office. In view of Clark's admission that, based solely on the cited art, the Patent Office was correct in allowing the 117 patent, the District Court concluded that Clark had failed to prove that the 117 patent was invalid under 35 U.S.C. §103.

We have carefully considered each of Clark's attacks on the District Court's obviousness analysis of the 117 patent and find merit in none of them. The District Court made the findings of fact required by *Graham v. John Deere Co., supra,* and nothing Clark has urged on appeal convinces us that these findings are not correct and fully supported [S. 40] by the record. Moreover, the District Court's conclusion of nonobviousness reflects both a praiseworthy understanding and proper application of the controlling law.

(5) *indefiniteness of 117 patent*

Under 35 U.S.C. §111, a patent application must include a specification of the patent. The requirements of this specification are set forth, as follows, in 35 U.S.C. §112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains * * * to make and use the same * * *.

Clark contends that the omission from the specification for the 117 patent of any mention of the weight distribution of the wheels of the loader rendered the 117 patent application deficient under §112. When the vehicle described by the 117 patent is fully loaded, 70% of the weight is on the two front wheels and 30% on the two rear wheels. The opposite is true in an unloaded condition: 70% of the weight is on the rear wheels and 30% on the fronnt wheels.

There is some dispute as to who introduced the weight distribution issue at trial and what significance was attributed to it by the District Court.[19] In any event, [S. 41] the District Court's brief discussion of the weight distribution of the patented loader occurred in its analysis of the obviousness of the 117 patent.[20] In response to Clark's allegation that the 117 patent was merely an obvious improvement over the M-400, the weight distribution of the patented loader was discussed. This aspect of the loader was hardly a surprise to Clark, which had touted the 70%-30% weight distribution in its own promotional literature. Nevertheless, Clark, which was also familiar with the patent application and thus aware that it did not mention the 70%-30% weight distribution, chose not to attack the 117 patent at trial on the basis of an inadequate specification under §112. It now voices this challenge to the 117 patent for the first time on appeal. Under the circumstances, we are hardly predisposed to excuse Clark's failure to raise this contention at trial, especially in light of the fact that [S.42] Clark has already succeeded in invalidating the 117 patent on other grounds. Nevertheless, because this contention lends itself to summary disposition, we will consider it now.

The District Court found that although the 70%-30% weight distribution is not expressly stated in the specification of the 117 patent, the features set forth in claims 10-15 and 18 do recite the structural features which provide this inherent condition. Thus, the weight distribution of the patented loader is inherent in the structural features recited in claims 10-15 and 18. A patent specification must be expressed in terms that will enable a person skilled in the art to which it pertains to make or use the invention. Were a person skilled in the loader art to construct a loader as described in the specification of the 117 patent with materials normally used for such construction, so as to include the elements of claims 10-15 and 18, the resulting structure would possess the 70%-30% weight distribution. Thus, the specification for the 117 patent is not deficient under §112.

254 patent

On July 25, 1962, Louis Keller, Cyril Keller and Clifford Melroe applied for a patent on "the ornamental design for a self-propelled loader." This patent, the 254 patent, was issued on May 21, 1963;[21] it is a design patent covering [S. 43] the machine mechanically patented in the 117 patent.[22] The District Court sustained the validity of the 254 patent.

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[19] Clark alleges that at trial, the Kellers "for the first time in the history of this patent, asserted that the key element in the 117 patent was the fact that there was a 70%-30% weight distribution on the wheels of the loader depending on whether the vehicle was fully loaded or unloaded." Clark also alleges that this weight distribution was labeled by the trial court as a critical element of the 117 patent. The Kellers respond that they have never asserted that the 70%-30% weight distribution is a key element and that Clark is attempting to mislead this court by stating that the trial court labeled the 70%-30% weight distribution as a critical element of the 117 patent.

[20] In its obviousness analysis, the District Court found the 70%-30% weight distribution to be a functional advantage inherent in the structure defined in claims 10-15 and 18 of the 117 patent and absent in the M-400. The patent specification recites the structural features which provide this functional advantage and we do not consider that the patent application was defective under § 112 for failure to describe this inherent functional advantage. Under these circumstances, it was proper for the District Court to consider the weight distribution of the patented loader in determining the obviousness of the patent.

On appeal, Clark has presented numerous arguments in favor of reversing the District Court's holding that the 254 patent is valid. Because we conclude that the 254 patent did not comport with the novelty requirement of 35 U.S.C. §171, we believe that a recitation and discussion of Clark's remaining allegations of error would be superfluous. Suffice it to say that we have scrutinized each of these other allegations of error and find them to be without merit.[23]

35 U.S.C. §171 provides that a person who invents any new, original and ornamental design for an article of manufacture may obtain a patent therefor, so long as the other [S. 44] conditions and requirements of Title 35 have been met. It follows, under an integration of the various requirements for patentability set forth in Title 35, that in order to be valid, a design patent must be new, original, ornamental nonobvious and the result of invention. In determining the validity of a design patent, it is the appearance of the article taken as a whole which must meet the statutory requirements, for "the thing invented or produced, for which a patent is given, is that which gives a peculiar or distinctive appearance to the manufacture, or article to which it may be applied * * *." *Gorham Co. v. White,* 81 U.S. (14 Wall.) 511, 525 (1871). *Schnadig Corp. v. Gaines Manufacturing Co., Inc.,* 494 F. 2d 383, 389 (6th Cir. 1974); *Hadco Products, Inc. v. Walter Kidde & Co.,* 462 F. 2d 1265, 1269 (3d Cir.), *cert. denied,* 409 U.S. 1023 (1972).

The tests by which the appearance of a design patent must be judged vary according to the particular statutory requirement for patentability which is at issue. The obviousness of a design patent is determined by an analysis under the general requirements of 35 U.S.C. §103, tailored to fit the design situation: the differences between the design patent and the prior art must not be obvious to a designer with ordinary skill in the art. The novelty of a design patent, on the other hand, is tested by determining the impact of the design upon an ordinary observer. A design patent is novel when the "average observer takes the new design for a different, and not a modified already existing design." *Thabet Manufacturing Co. v. Kool Vent Metal Awning Corp.,* 226 F. 2d 207, 212 (6th Cir. 1955). This is the prevailing and now well-settled test for the novelty of a design patent. *See, e.g., Schnadig Corp. v. Gaines Manufacturing Co., Inc., supra* at 389; *Rains v. Cascade* [S. 45] *Industries, Inc.,* 402 F. 2d 241, 247

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[21] The record is somewhat unclear as to the duration of this design patent. Counsel for Clark stated at oral argument that the 254 patent had been issued for a fourteen-year period. Based on that figure, the 254 patent would have expired on May 21, 1977.

[22] The history of the development of the machine which underlies both the 117 mechanical patent and the 254 design patent has been set forth at length in our analysis of the 117 patent and will not be repeated here.

[23] We note that our determination that the 254 patent is not novel, when considered in light of the M-400 loader, does no vitiate the trial court's conclusion that the Kellers acted in good faith in the prosecution of the 254 design patent. Even if the M-400 is assumed to be better prior art than the 506 patent, which was considered by the Patent Office, we do not believe that Clark has shown that the Kellers' nondisclosure of the M-400 constituted an act of wilful bad faith manifesting an intent to mislead the Patent Office. The Kellers apparently considered the M-400 nothing more than a hybrid version of the earlier Melroe loaders covered by the 506 design patent, which was cited as prior art. Although we disagree with their appraisal of the M-400, the record does not provide support for the conclusion that their decision not to disclose the M-400 to the Patent Office was motivated by bad faith. Clark has not proved by clear, convincing and substantial evidence that the Kellers failed to act in good faith in the prosecution of the 254 patent.

(3d Cir. 1968); *Hygienic Specialties Co. v. H. G. Salzman, Inc.*, 302 F. 2d 614, 617 (2d Cir. 1962); *Application of Bartlett*, 300 F. 2d 942, 943 (C.C.P.A. 1962).

At trial, Clark contended that the 254 design patent lacked novelty when viewed against the M-400 loader; it argued that the M-400 loader design was so similar in overall configuration to the design of the 254 patent that the ordinary observer could not distinguish them.[24] The District Court made the finding that there was no substantial evidence that an ordinary observer could not readily distinguish between the M-400 and the subsequent Bobcat loader covered by the 254 patent. Clark's novelty challenge to the 254 patent was rejected in the following terse conclusion:

> The test of the "ordinary observer" may be relevant to determine novelty with respect to design; however, there is no substantial evidence in this record that ordinary observers could not readily distinguish between the M-400 and the subsequent BOBCAT loader covered by the 254 patent. The Court refers specifically to the sparse testimony of witnesses Steenhoven and Van Winkle.

Clark Equipment Co. v. Keller, supra, slip op. at 79.

Although various pictures and drawings of the M-400 [S. 46] loader and Bobcat loader covered by the 254 patent were introduced at trial, there was little testimony ad-

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[24] The sole prior art considered by the Patent Office was the 506 design patent, a patent on the machine mechanically patented by the 503 patent. While the District Court held that the M-400 was no better prior art for the 254 design patent than was the cited 506 patent, it nevertheless proceeded to consider the validity of the 254 patent from the viewpoint that the M-400 was prior art. We will follow the same analytic approach.

duced that could be deemed applicable to the issue of the impact of the appearances of these loaders on the ordinary observer.[25] While we agree with the District Court that the testimony on the issue of the visual impact of these loaders was "sparse," we are unable to agree either with the finding that the record was devoid of substantial evidence probative of this point or the statement that the ordinary observer test "may" be relevant to a determination of novelty. The impact of the design upon an ordinary observer "may" not be relevant in determining novelty; as we have previously noted, it *is* the test for the novelty of a design patent. Moreover, when this test is applied to the record here, it compels the conclusion that the 254 patent is not novel.

In emphasizing the minimal quantity of testimony on this issue, the trial court clearly chose to base its conclusion of novelty upon the documentary evidence illustrating the designs of the M-400 and 254 patent. The documents depicting the M-400 and Bobcat loaders are as available to this court as they were to the trial court and it is our [S. 47] prerogative to interpret these exhibits ourselves. *American Infra-Red Radiant Co. v. Lambert Industries, Inc.*, 360 F. 2d 977, 988 (8th Cir.) *cert. denied*, 385 U.S. 920 (1966). We have reviewed and compared this documentary evidence with care, and we are convinced that the trial court erred in finding that the differences between the M-400 and Bobcat loaders were sufficient to establish the novelty of the 254 patent. The differences between the two designs, cited by the District Court in support of its finding, involve structural details; when the overall visual impact, which is the appropriate reference for design patents, is considered, the striking similarity of the designs of the M-400 and 254 patent becomes clear. Both are compact four-wheel front-end loaders with boom arms pivoted on supports adjacent to the rear and extending down at a low angle in the front.

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[25] The testimony of Steenhoven and Van Winkle related to a transaction between the two in which Steenhoven painted an M-400 loader white, the standard color for Bobcat loaders, and sold it to Van Winkle as a used Bobcat. While we would hesitate to consider this transaction definitive evidence that the ordinary observer could not distinguish the M-400 from the 254 design, it can certainly be viewed as providing support for such a conclusion. Moreover, the fact that testimony on this transaction is "sparse" and that the record is not replete with evidence of actual episodes of confusion on the part of ordinary observers hardly detracts from the cogency of the documentary evidence illustrating the similarity of the designs of the two loader models.

While "we do not say that six eyes are necessarily apt to reach a more accurate assessment than are two," *Frito-Lay, Inc. v. So Good Potato Chip Co.,* 540 F. 2d 927, 931 (8th Cir. 1976), our observation of the documentary evidence depicting the designs of the M-400 loader and the 254 patent convinces us that an average observer would not view the design of the 254 patent as anything more than a modification of the M-400.

Accordingly, we conclude that the 254 patent did not meet the requirement of novelty posited by 35 U.S.C. §171. This is our sole disagreement with the District Court's analysis of the 254 patent and it is on this basis alone that we hold the 254 patent invalid.

The judgment of the District Court on the 503 and 117 patents is affirmed; the judgment on the 254 patent is [S. 48] reversed.

A true copy.

Attest:

Clerk, U.S. Court of Appeals, Eighth Circuit.